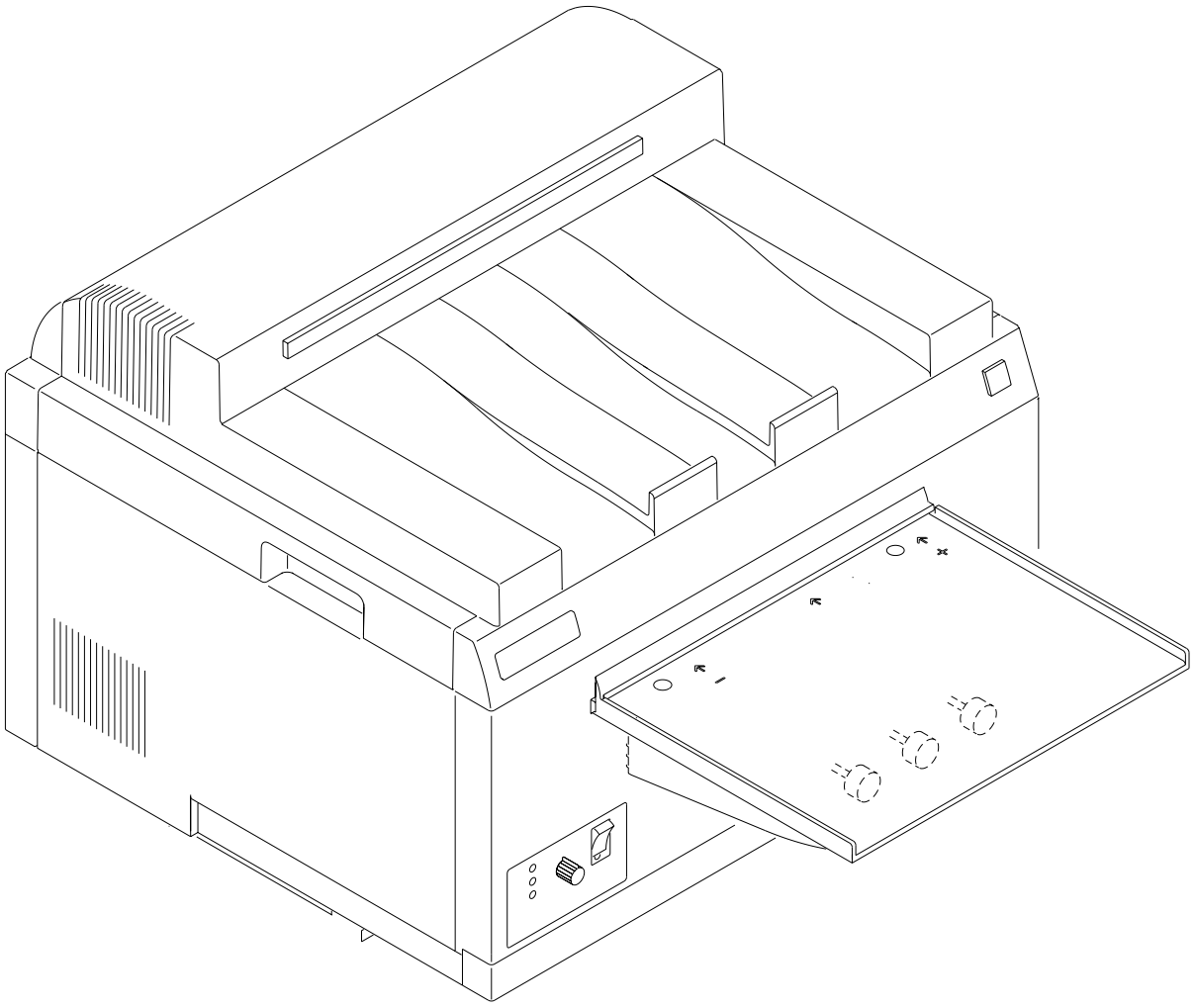
Publication No. 981090
September 1995
Supersedes
October 1994

SERVICE MANUAL for the *Kodak X-Omat* M43 and M43A PROCESSORS and the *Kodak X-Omat* Clinic 1 PROCESSOR



H130_0009DA

HEALTH SCIENCES DIVISION

© Eastman Kodak Company

PLEASE NOTE The information contained herein is based on the experience and knowledge relating to the subject matter gained by Eastman Kodak Company prior to publication.

No patent license is granted by this information.

Eastman Kodak Company reserves the right to change this information without notice, and makes no warranty, express or implied, with respect to this information. Kodak shall not be liable for any loss or damage, including consequential or special damages, resulting from any use of this information, even if loss or damage is caused by Kodak's negligence or other fault.

This equipment includes parts and assemblies sensitive to damage from electrostatic discharge. Use caution to prevent damage during all service procedures.

Warning

To avoid hazardous conditions, keep floors and floor coverings around your *Kodak X-Omat* Processors and associated drains clean and dry at all times. Any accumulation of fluids from mixing tanks, drain lines, etc., should be cleaned up immediately. In the event of an accumulation of liquid due to backup, overflow, or other malfunctions of the drain associated with your *Kodak X-Omat* Processor, call a plumber or other contractor to correct any problem with the drain. Kodak accepts no responsibility or liability whatsoever for the serviceability of any drain connected to or associated with a *Kodak X-Omat* Processor. Such drains are the sole responsibility of the customer.

Warning

Before you replace electrical components, move the MAIN WALL CIRCUIT BREAKER to "OFF". Lock the MAIN WALL CIRCUIT BREAKER and attach a MAGNETIC POWER WARNING SIGN TL-1926 to warn others not to energize the PROCESSOR while you are performing service.

Important

Only qualified service personnel should service the PROCESSOR.

Table of Contents

Description	Page
Introduction	5
Electrostatic Discharge	5
Required Special Tools	6
Overview of the PROCESSOR	6
Energizing the PROCESSOR	8
De-energizing the PROCESSOR	8
Draining the PROCESSOR TANKS	9
RACKS	10
Repairing the DEVELOPER and FIXER RACKS	10
Adjusting the DEVELOPER and FIXER RACKS for Squareness	10
ENTRANCE ROLLER PAIR of the DEVELOPER and FIXER RACKS	11
EXIT ROLLER PAIR of the DEVELOPER and FIXER RACKS	13
Plastic ROLLERS of the DEVELOPER and FIXER RACK	15
Removing the GUIDE SHOES of the DEVELOPER and FIXER RACKS	16
Repairing the WASH RACK	17
Adjusting the WASH RACK for Squareness	17
ENTRANCE ROLLER ASSEMBLY of the WASH RACK	18
EXIT SQUEEGEE ROLLER ASSEMBLY of the WASH RACK	22
CENTRAL DRIVE ROLLER PAIR of the WASH RACK	26
Disassembling a CENTRAL DRIVE ROLLER PAIR of the WASH RACK	26
WASH TUBES and GASKETS - WASH RACK	30
Repairing the DRYER RACK	32
Adjusting the DRYER RACK for Squareness	32
Removing the DRYER AIR TUBES	33
Removing the DRYER ROLLERS	35
DRYER	38
Removing the DRYER THERMISTOR (RT2), AIR VANE SWITCH (S4), DRYER HEATER (R2), and DRYER BLOWER MOTOR (B1)	38
Removing the DC INTERLOCK SWITCH S6, the DRYER THERMISTOR, and the AIR VANE SWITCH	41
Removing the DRYER HEATER	42
Removing the DRYER BLOWER	44
MAIN DRIVE	46
Removing the DRIVE MOTOR	46
Removing the MAIN DRIVE SHAFT	48
Adjusting the MAIN DRIVE CHAIN and the DRIVE MOTOR	50
Plumbing	52
Routing the TUBING and Positioning the SCREW CLAMPS	52
Removing the RECIRCULATION PUMPS and the REPLENISHMENT PUMP	55
Removing the DEVELOPER (B5) and FIXER (B6) RECIRCULATION PUMPS	55
Removing the WASH RECIRCULATION PUMP (B2)	57
Removing the DEVELOPER/FIXER REPLENISHMENT PUMP (B3)	58
Adjusting the Fixer To Developer Replenishment Rate Ratio	60
Removing the DEVELOPER HEATER (R1)	61
Removing the DEVELOPER THERMISTOR (RT1)	62
Removing the DRAIN VALVES	65
Disassembling and Inspecting the DRAIN VALVES	65
Replacing the DRAIN VALVES	67

Removing the WATER INPUT SOLENOID VALVE (L1) 68
Removing the DIVERTER VALVE (L2) and (L3) in the M43 and M43A PROCESSORS 70
Removing the HEAT EXCHANGER. 72
Cleaning the WASH INLET BAR 77
Electrical 78
Removing the 100 CIRCUIT BOARD 78
Removing the STATUS INDICATORS. 82
Calibrating the DEVELOPER TEMPERATURE DISPLAY of the M43 and M43A Only 84
Setting the Developer Temperature 86
Removing the POWER SUPPLY 88
Removing the LINE FILTER (FL1) 91
Changing the FILM SENSORS 93
Removing the SOLID STATE RELAYS 96
Removing the AC INTERLOCK SWITCH S5 for the TOP COVER 98
Periodic Maintenance General Information 100
Preventive Maintenance: Every 6 Months or As Required 103
Publication Change Notice Table 106

Section 1: Introduction

Electrostatic Discharge

Overview

ESD (Electrostatic Discharge) is a primary source of:

- product downtime
- lost productivity
- costly repairs.

While you cannot feel a static charge of less than 3,500 volts, as few as 30 volts can damage or destroy essential components in electronic equipment.

Effective ESD control requires that you adhere to the following guidelines.

Personnel Awareness

Personnel throughout the organization need to be aware of ESD, because partial ESD control is no ESD control at all. Please note:

- ESD is a primary source of frustrating equipment failures and intermittent malfunctions.
- ESD affects productivity **and** profitability.
- ESD can be controlled.

General Precautions

[1] **Do not** store trash near static-sensitive equipment.

[2] **Do not** place plastic materials near electronic components. Trash can liners and styrofoam cups generate static electricity that can damage or destroy electronic components.

Preventive Measures

[3] Always look for an ESD warning label before doing any procedure involving static-sensitive components such as circuit boards. All static-sensitive components are marked with bright graphic labels that frequently include instructions. Follow all label instructions.

[4] If the work area is carpeted, spray the carpet with an anti-static solution. In low-humidity environments, spray carpets periodically with an anti-static solution available at local stores or available through Kodak as TL-3832.

[5] Wear a grounding strap when handling static-sensitive components. Make sure that the clip remains attached to a properly grounded, unpainted, clean surface.

[6] Repair static-sensitive components at an ESD-protected work station. If you cannot repair static-sensitive components at a protected work station, then be sure to use a portable grounding mat. (If you would like assistance in setting up ESD-protected work stations, contact your Kodak representative.)

[7] Use ESD-protective packaging when transporting static-sensitive components from one area to another. By inserting static-sensitive components into transparent anti-static bags, available from a variety of manufacturers, you will greatly reduce the possibility of ESD damage to those components.

Required Special Tools

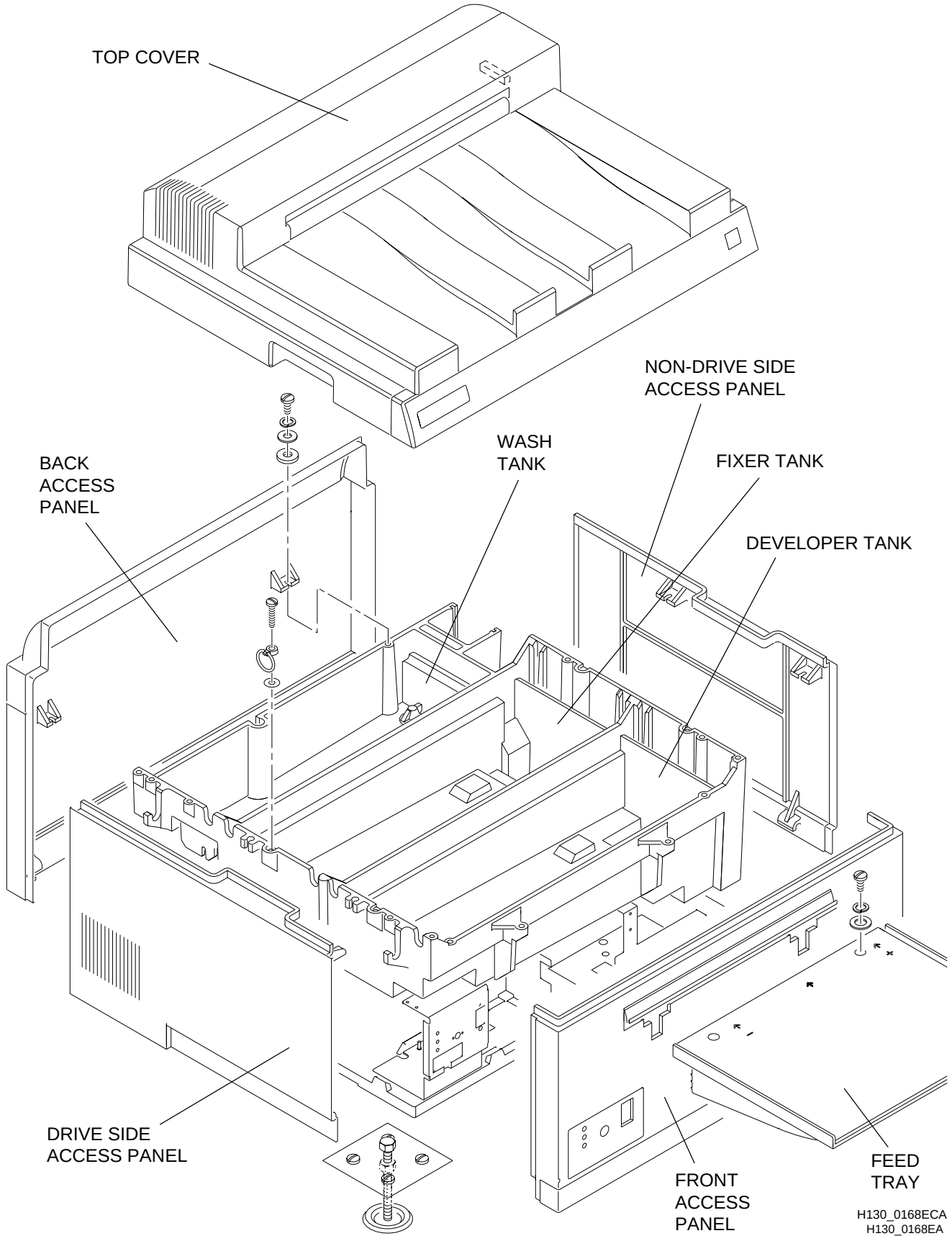
Description of Tool	Tool Number
SAFETY INTERLOCK TOOL	TL-4740
MAGNET	963312
EXTENSION TOOL	TL-4571
THERMOMETER	TL-4802
ANGLE OILER	TL-1172
GREASE	TL-2324

Description of Tool	Tool Number
RED GREASE	TL-4156
MOTOR OIL	TL-2244
SPRING GAUGE	TL-3154
ROLL PIN PUNCH	TL-1388
BOTTLE BRUSH	TL-4833
HEAT SINK COMPOUND	TL-2192
PROM EXTRACTION TOOL	TL-4430
PIN EXTRACTION TOOL	TL-2105
CLAMP	TL-2170

Overview of the PROCESSOR

Many of the procedures contained in this manual require that the PROCESSOR be de-energized before the procedure is begun. Many of the procedures also require that the TOP COVER and 4 ACCESS PANELS be removed from the PROCESSOR before the procedure is begun. For your convenience, illustrations showing the location of the TOP COVER, ACCESS PANELS, MAIN CIRCUIT BREAKER, and other major components appear on the following pages.

Figure 1 **Identifying the TOP COVER, ACCESS PANELS, and FEED TRAY**



Energizing the PROCESSOR

[1] Close the WASH DRAIN VALVE by pushing the DRAIN VALVE KNOB in and rotating it 1/4 turn.

[2] Turn on the incoming water supply.

[3] Move the wall power switch to the “ON” position.

[4] Move the MAIN CIRCUIT BREAKER CB1 to the “1” position.

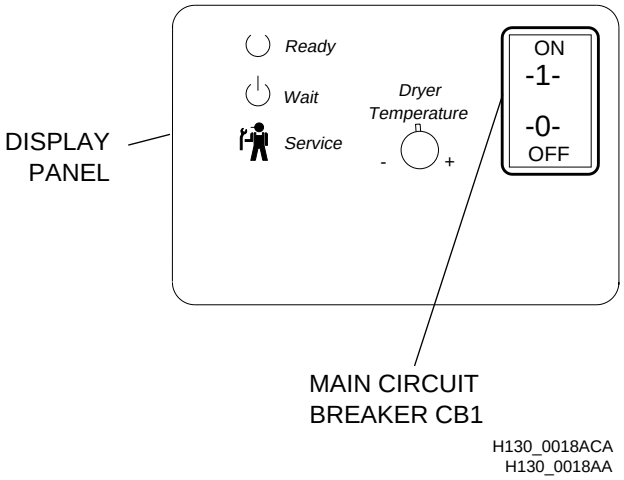
De-energizing the PROCESSOR

[1] Move the MAIN CIRCUIT BREAKER CB1 to the “O” position.

[2] Move the wall power switch to the “OFF” position.

[3] Turn off the incoming water supply.

Figure 2 **Energizing the PROCESSOR**



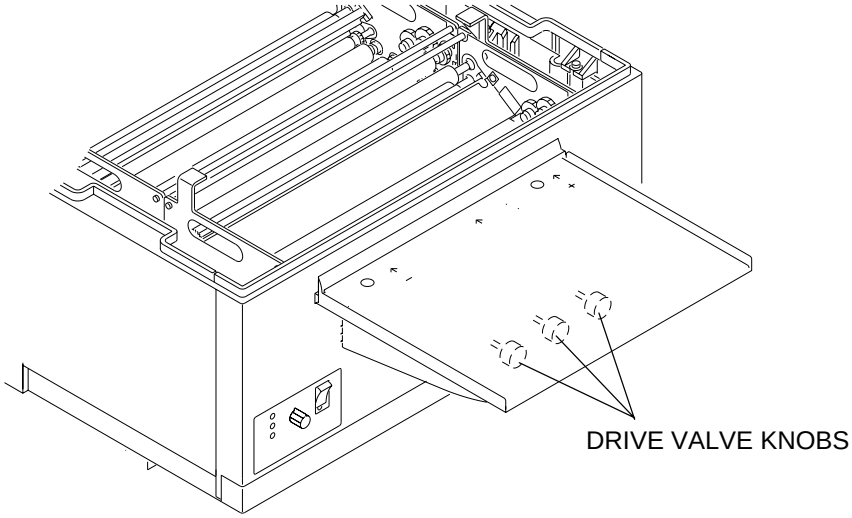
Draining the PROCESSOR TANKS

Caution

If using a Silver Recovery Unit, disconnect the Drain Tube from the input side of the Silver Recovery Unit before you open the Drain Valve. This will avoid flooding. Drain the fixer solution into a container or directly into the floor drain. **Check the local codes before draining solutions into a floor drain.**

[1] Drain the TANK by rotating the DRAIN VALVE KNOB in either direction ¼ turn.You will feel the STEM lock into place. When the TANK, is drained, close the DRAIN VALVE by rotating the DRAIN VALVE KNOB ¼ turn in either direction.

Figure 3 **Draining the TANKS**



H130_0019BCG
H130_0019BA

Section 2: RACKS

Repairing the DEVELOPER and FIXER RACKS

Adjusting the DEVELOPER and FIXER RACKS for Squareness

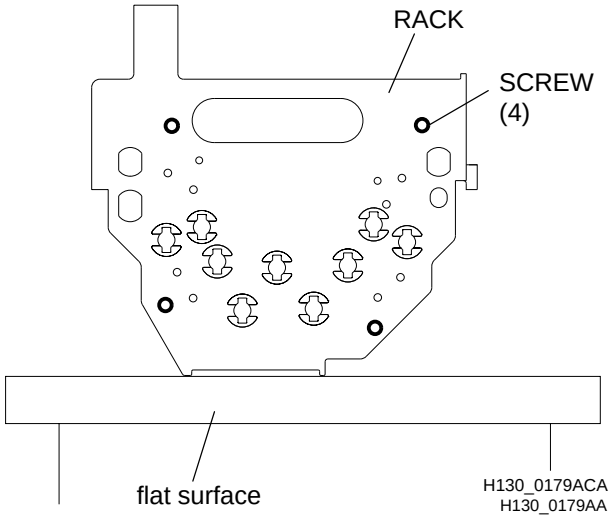
Important

Only qualified service personnel should service the PROCESSOR.

Important

All the procedures in this section require that you de-energize the PROCESSOR and remove the TOP COVER before beginning the first step of the service procedure.

Figure 4 **Positioning the RACK**



[1] Remove the RACK from the PROCESSOR.

[2] Place the RACK on a smooth, flat surface.

[3] Loosen the SCREWS on the ends of the 4 TIE RODS.

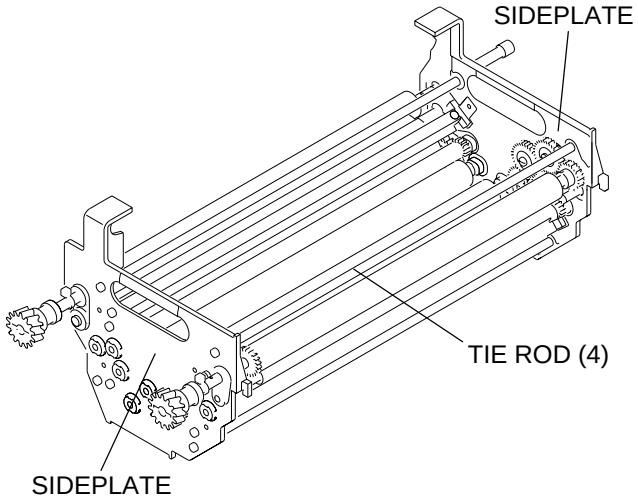
[4] Check that the 2 SIDEPLATES touch the flat surface evenly.

[5] Twist the RACK as necessary.

[6] Tighten the SCREWS.

[7] Install the RACK into the PROCESSOR.

Figure 5 **Adjusting the RACK for Squareness**



ENTRANCE ROLLER PAIR of the DEVELOPER and FIXER RACKS

Note

See Figure 6 on Page 12 when doing this procedure.

[1] Check that:

- PROCESSOR is de-energized
- TOP COVER is removed

[2] Remove the RACK from the PROCESSOR. To prevent contamination of the processing solutions, use the DRIP TRAY and the SPLASH GUARD (FIXER RACK only).

[3] Rinse the RACK with warm water. Using a clean, damp, lint-free cloth, wipe the ROLLERS to remove any chemical residue.

[4] From the **Drive** end of the ENTRANCE DRIVE ROLLER, remove the E-RING closest to the THRUST BEARING.

[5] Slide the THRUST BEARING and the GEAR towards the **Non-Drive** end of the SHAFT. The PIN will fall from the GEAR.

[6] From the **Drive** end of the ENTRANCE ROLLER PAIR, remove:

a. DRIVE GEAR

b. THRUST BEARING

c. 2 E-RINGS

d. WIRE TIE (FIXER RACK only)

e. BEARING HOLDER with BEARING and SPRING

- remove the BEARING HOLDER, the BEARINGS, and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARING HOLDER

[7] DEVELOPER RACK Only — From the **Non-Drive** end of the ENTRANCE DRIVE ROLLER, remove the END CAP.

[8] From the **Non-Drive** end of the ENTRANCE ROLLER PAIR, remove:

a. 3 E-RINGS

b. BEARING HOLDER with BEARING and SPRING

- remove the BEARING HOLDER, the BEARINGS, and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARING HOLDER

[9] Remove the DRIVEN ROLLER.

[10] Using ROLL PIN PUNCH TL-1388, remove the ROLL PIN from the GEAR on the DRIVE ROLLER.

[11] Pull the DRIVE ROLLER SHAFT through the **Drive** end SIDEPLATE.

[12] Reverse the steps above to assemble the ENTRANCE ROLLER PAIR.

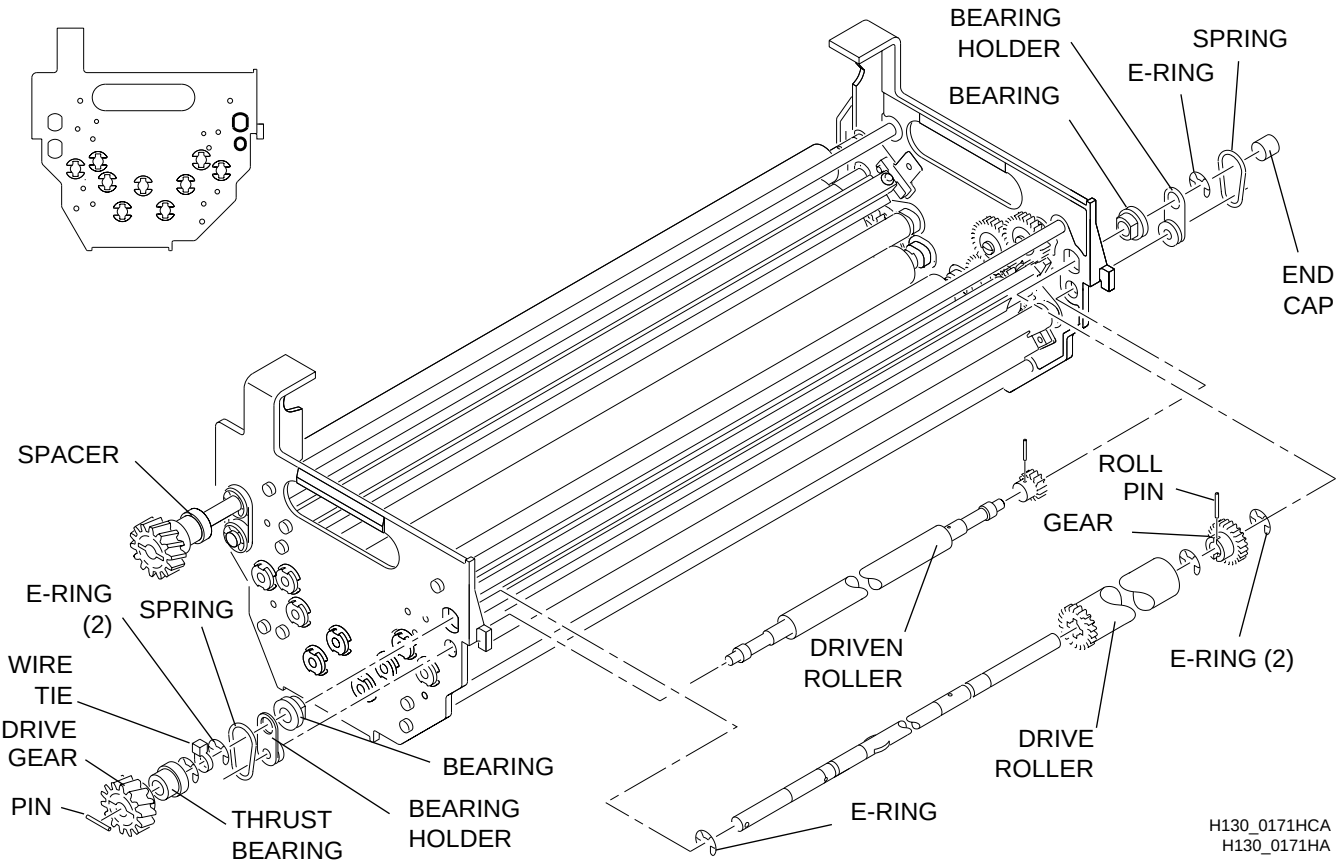
Caution

When assembling the ENTRANCE ROLLER PAIR, check that you:

- position the E-RINGS in the GROOVES on the SHAFTS
- install the BEARING HOLDER, BEARINGS, and SPRING as an assembly to prevent stretching the SPRING over the BEARING HOLDER

[13] Check that the GEARS of the RACK mesh.

Figure 6 **ENTRANCE ROLLER PAIR of the DEVELOPER and FIXER RACKS — FIXER RACK Shown**



EXIT ROLLER PAIR of the DEVELOPER and FIXER RACKS

Note

See Figure 7 on Page 14 when doing this procedure.

[1] Check that:

- PROCESSOR is de-energized
- TOP COVER is removed

[2] Remove the RACK from the PROCESSOR. To prevent contamination of the processing solutions, use the DRIP TRAY and the SPLASH GUARD (FIXER RACK only).

[3] Rinse the RACK with warm water. Using a clean, damp, lint-free cloth, wipe the ROLLERS to remove any chemical residue.

[4] From the **Drive** end of the DRIVE ROLLER, remove the E-RING closest to the THRUST BEARING.

[5] Slide the THRUST BEARING and the GEAR towards the **Non-Drive** end of the SHAFT. The PIN will fall from the GEAR.

[6] From the **Drive** end of the EXIT SQUEEGEE ROLLER PAIR, remove:

a. DRIVE GEAR
b. THRUST BEARING
c. 2 E-RINGS (1 from each SHAFT)
d. WIRE TIE (DEVELOPER RACK only)
e. SPACER (on DRIVE SHAFT)
f. 2 BEARINGS with the SPRING - note the orientation of the BEARINGS
   - remove the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARINGS
g. 2 E-RINGS against the inner side of the **Drive** end SIDEPLATE (1 from each SHAFT)

[7] FIXER RACK Only — From the **Non-Drive** end of the EXIT DRIVE ROLLER, remove the END CAP.

[8] From the **Non-Drive** end of the EXIT ROLLER PAIR, remove:

a. 2 E-RINGS (1 from each SHAFT)
b. SPACER from the DRIVE SHAFT
c. 2 BEARINGS with the SPRING - note the orientation of the BEARINGS
   - remove the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARINGS
d. 2 E-RINGS (1 from each SHAFT)

[9] Remove the DRIVEN ROLLER.

[10] Remove the DRIVE ROLLER.

[11] Reverse the steps above to assemble the EXIT ROLLER PAIR.

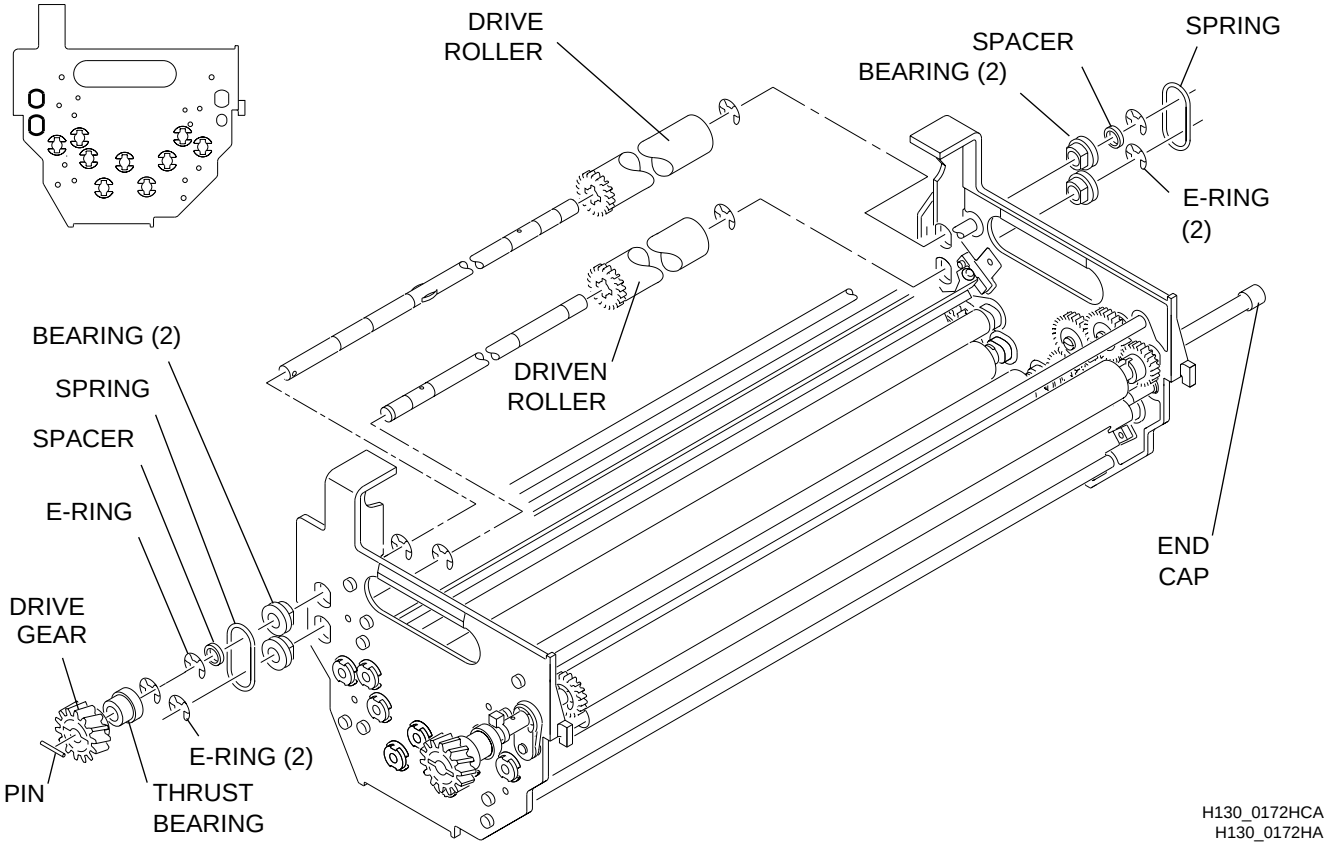
Caution

When assembling the ENTRANCE ROLLER PAIR, check that you:

- position the E-RINGS in the GROOVES on the SHAFTS
- install the BEARING HOLDER, BEARINGS, and SPRING as an assembly to prevent stretching the SPRING over the BEARING HOLDER

[12] Check that the GEARS of the RACK mesh.

Figure 7 **EXIT ROLLER PAIR of the DEVELOPER and FIXER RACKS — FIXER RACK Shown**



Plastic ROLLERS of the DEVELOPER and FIXER RACK

[1] Check that:

- PROCESSOR is de-energized
- TOP COVER is removed

[2] Remove the RACK from the PROCESSOR. To prevent contamination of the processing solutions, use the DRIP TRAY and the SPLASH GUARD (FIXER RACK only).

[3] Rinse the RACK with warm water. Using a clean, damp, lint-free cloth, wipe the ROLLERS to remove any chemical residue.

[4] If you are removing ROLLERS from the DEVELOPER RACK, remove the COVER from the RACK.

[5] Remove the STUD from each end of the ROLLER you wish to remove. Insert a SCREWDRIVER in the notch at the base of the STUD and pry the STUD loose. Check the STUDS for damage. If necessary, install new STUDS.

[6] Remove the ROLLER from the RACK.

[7] Using TWEEZERS or a HEMOSTAT, press the 2 TABS on the ROLLER. Remove the GEAR.

[8] Reverse the steps above to install a new ROLLER.

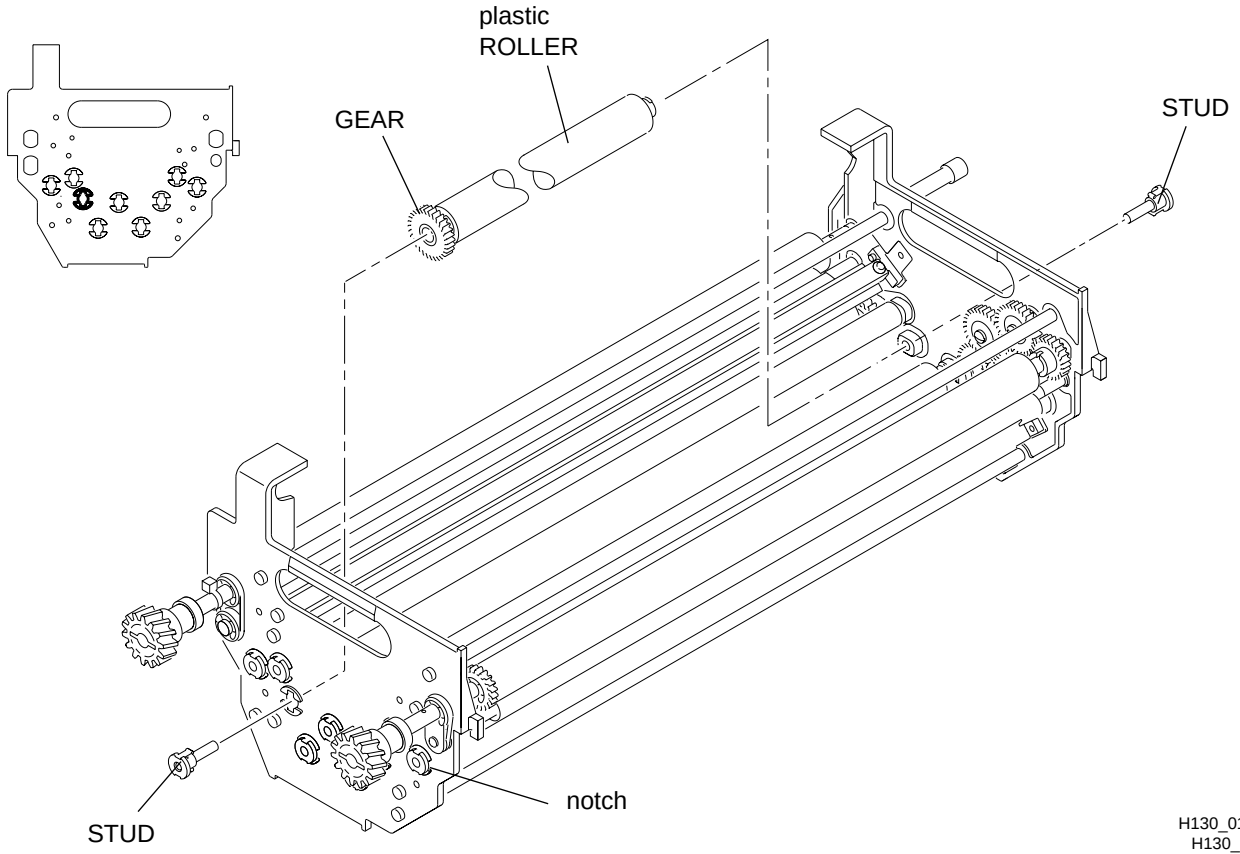
Important

When installing the GEAR onto the ROLLER check that:

- notches in the GEAR align with the POSTS on the SHAFT
- TABS on the ROLLER snap into position.

[9] Check that the GEARS of the RACK mesh and that all ROLLERS turn freely.

Figure 8 **Plastic ROLLERS of the DEVELOPER and FIXER RACKS — DEVELOPER RACK Shown**



Removing the GUIDE SHOES of the DEVELOPER and FIXER RACKS

[1] Check that:

- PROCESSOR is de-energized
- TOP COVER is removed

[2] Remove the RACK from the PROCESSOR. To prevent contamination of the processing solutions, use the DRIP TRAY and the SPLASH GUARD (FIXER RACK only).

[3] Rinse the RACK with warm water. Using a clean, damp, lint-free cloth, wipe the ROLLERS to remove any chemical residue.

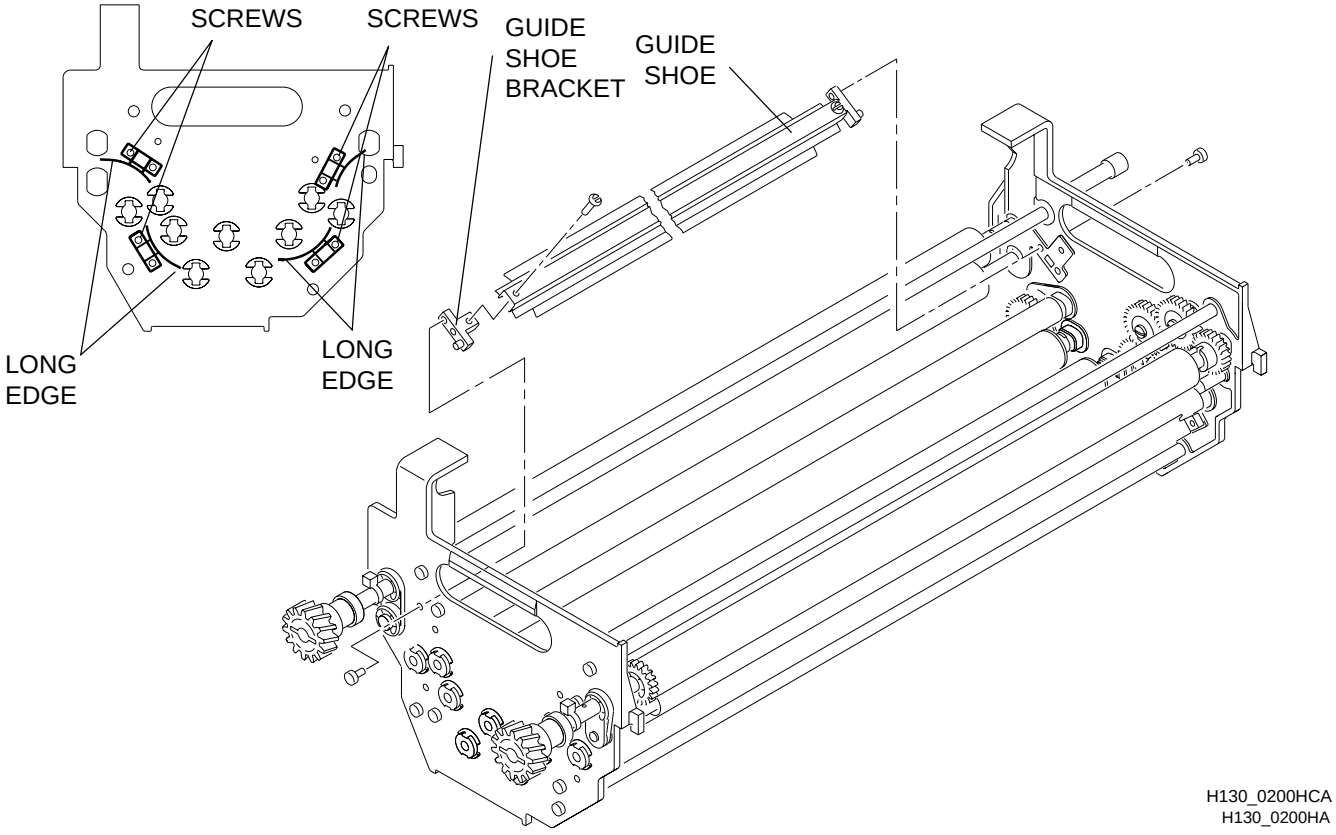
[4] Remove the 2 SCREWS securing the GUIDE SHOES to the GUIDE SHOE BRACKET.

(a) Note the orientation of the long edge of the GUIDE SHOES.

(b) If you need to remove the GUIDE SHOE BRACKET, note its correct orientation for later installation.

[5] To install the new GUIDE SHOES, reverse the steps above.

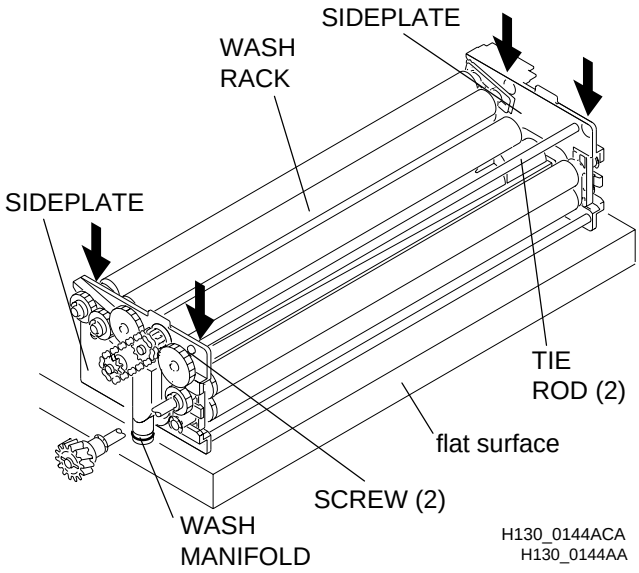
Figure 9 **Removing the GUIDE SHOES of the DEVELOPER and FIXER RACKS**



Repairing the WASH RACK

Adjusting the WASH RACK for Squareness

Figure 10 **Adjusting the WASH RACK for Squareness**



[1] Remove:

- DRYER RACK
- WASH RACK

[2] Place the WASH RACK on a smooth, flat surface. Position the RACK so that the WASH MANIFOLD hangs off the edge of the work surface.

[3] Loosen the 2 SCREWS on the ends of the 2 TIE RODS.

[4] Check that the 2 SIDEPLATES touch the flat surface evenly.

[5] Twist the WASH RACK as necessary.

[6] Tighten the SCREWS loosened in Step 3.

[7] Install the WASH RACK and the DRYER RACK into the PROCESSOR.

ENTRANCE ROLLER ASSEMBLY of the WASH RACK

WASH RACK Preparation

[1] Check that:

- PROCESSOR is de-energized
- TOP COVER is removed

[2] Remove:

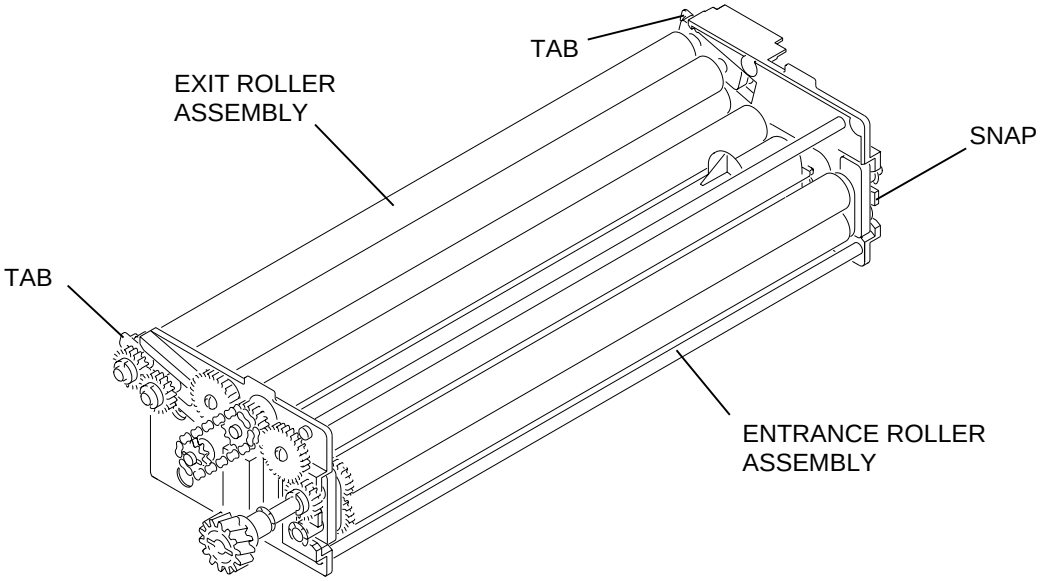
- DRYER RACK
- WASH RACK

[3] Remove the ENTRANCE ROLLER ASSEMBLY from the WASH RACK by:

(a) locating the SNAPS on the WASH RACK that secure the ENTRANCE ROLLER ASSEMBLY

(b) pulling the SNAPS away from the BEARING BLOCKS on the ENTRANCE ROLLER ASSEMBLY

Figure 11 **Removing the ENTRANCE ROLLER ASSEMBLY**



Disassembling the Non-Drive End of the ENTRANCE ROLLER ASSEMBLY of the WASH RACK

[4] Remove from the 2 SHAFTS:

a. 2 E-RINGS

b. 2 SPACERS - note the location of the different size SPACERS

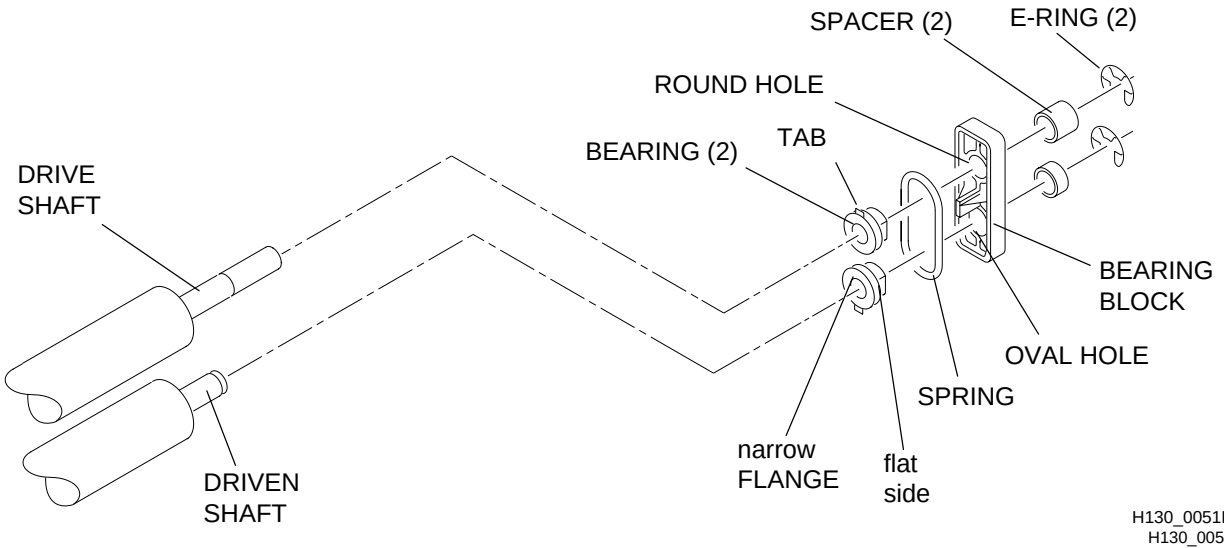
c. BEARING BLOCK - note the orientation

d. 2 BEARINGS with the SPRING - note the orientation of the TAB on the BEARINGS

- remove the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARING BLOCK

[5] Slide the ROLLERS off of the SHAFTS.

Figure 12 **Non-Drive End of the ENTRANCE ROLLER ASSEMBLY of the WASH RACK**



Assembling the Non-Drive End of the ENTRANCE ROLLER ASSEMBLY of the WASH RACK

[6] If necessary, install new ROLLERS onto the SHAFTS.

[7] Install the following parts onto the SHAFT:

a. 2 BEARINGS with the SPRING - check that the BEARINGS are oriented with the TABS to the outside
   - install the BEARINGS with the narrow FLANGE against the ROLLER
   - install the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARING BLOCK

b. BEARING BLOCK - check orientation
   - insert the DRIVE SHAFT into the ROUND HOLE
   - insert the DRIVEN SHAFT into the OVAL HOLE

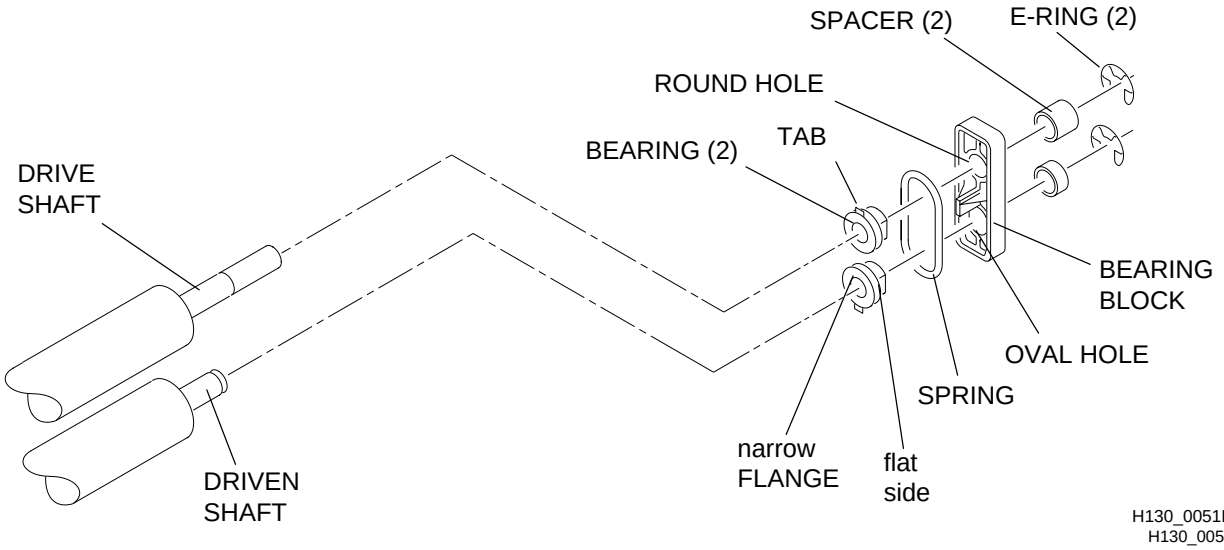
c. 2 SPACERS - check the location of the different size SPACERS

d. 2 E-RINGS

[8] Install the ENTRANCE ROLLER ASSEMBLY in the WASH RACK.

[9] Check that all the ROLLERS turn freely.

Figure 13 **Non-Drive End of the ENTRANCE ROLLER ASSEMBLY of the WASH RACK**



Disassembling the Drive End of the ENTRANCE ROLLER ASSEMBLY of the WASH RACK

Note

- Removal of the ROLLERS is easier if you remove them from the **Non-Drive** end of the ASSEMBLY. See the procedure on Page18.
- See Figure 14 on Page 21 when doing this procedure.

[10] Remove the E-RING.

[11] Slide the BEARING and the GEAR toward the ROLLERS; one DOWEL PIN will drop from the SHAFT.

[12] Remove from the SHAFTS:

a. DRIVE GEAR
b. THRUST BEARING
c. ROLL PIN - use a ROLL PIN PUNCH TL-1388
d. GEAR
e. 2 E-RINGS
f. 2 SPACERS - note the location of the different size SPACERS
g. BEARING BLOCK - note the orientation
h. 2 BEARINGS with the SPRING - note the orientation of the TAB on the BEARINGS
   - remove the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARING BLOCK

Assembling the Drive End of the ENTRANCE ROLLER ASSEMBLY of the WASH RACK

Note

See Figure 14 on Page 21 when doing this procedure.

[13] Install on the 2 SHAFTS:

a. 2 BEARINGS with SPRING - check the orientation of the BEARINGS
   - install the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARING BLOCK
b. BEARING BLOCK
   - insert the DRIVE SHAFT into the ROUND HOLE
   - insert the DRIVEN SHAFT into the OVAL HOLE
c. 2 SPACERS - check the location of the different size SPACERS
d. 2 E-RINGS
e. GEAR
f. ROLL PIN - use a ROLL PIN PUNCH TL-1388
g. THRUST BEARING
h. DRIVE GEAR
i. DOWEL PIN
j. E-RING

[14] Install the ENTRANCE ROLLER ASSEMBLY into the WASH RACK; check that the ASSEMBLY “snaps” into position.

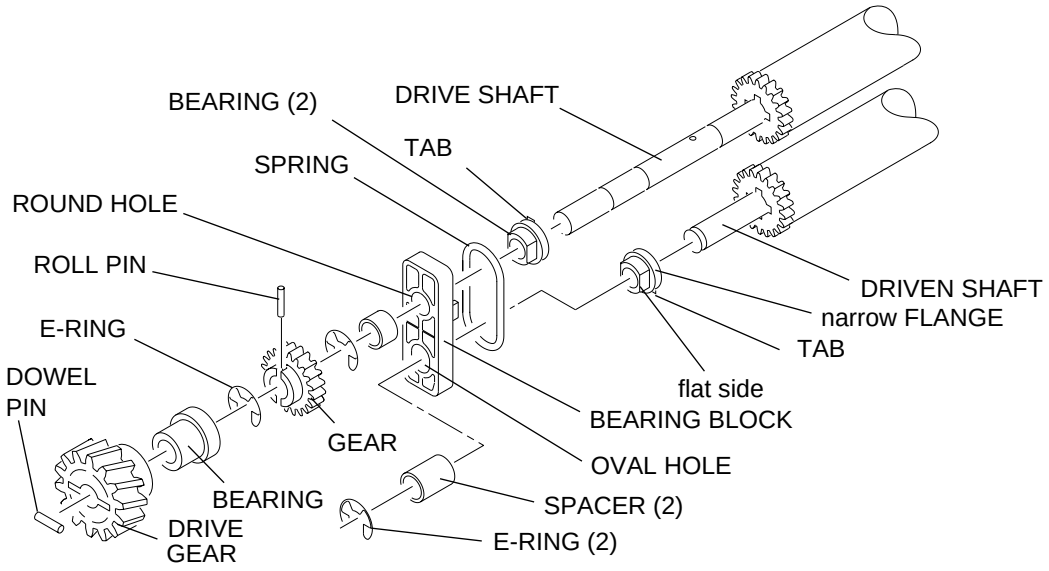
[15] Check that the GEARS of the ENTRANCE ROLLER ASSEMBLY engage correctly.

[16] Check that all ROLLERS turn freely.

[17] Install the WASH RACK into the PROCESSOR.

[18] Check that the DRIVE GEAR of the ENTRANCE ROLLER ASSEMBLY engages with the WORM of the MAIN DRIVE SHAFT correctly.

Figure 14 **Drive End of the ENTRANCE ROLLER ASSEMBLY of the WASH RACK**



H130_0050BCA
H130_0050BA

EXIT SQUEEGEE ROLLER ASSEMBLY of the WASH RACK

WASH RACK Preparation

Note

The SHAFT and ROLLER of the EXIT SQUEEGEE ROLLER ASSEMBLY are a single ASSEMBLY. To replace the SHAFT and ROLLER ASSEMBLY, you must disassemble both ends of the SHAFT.

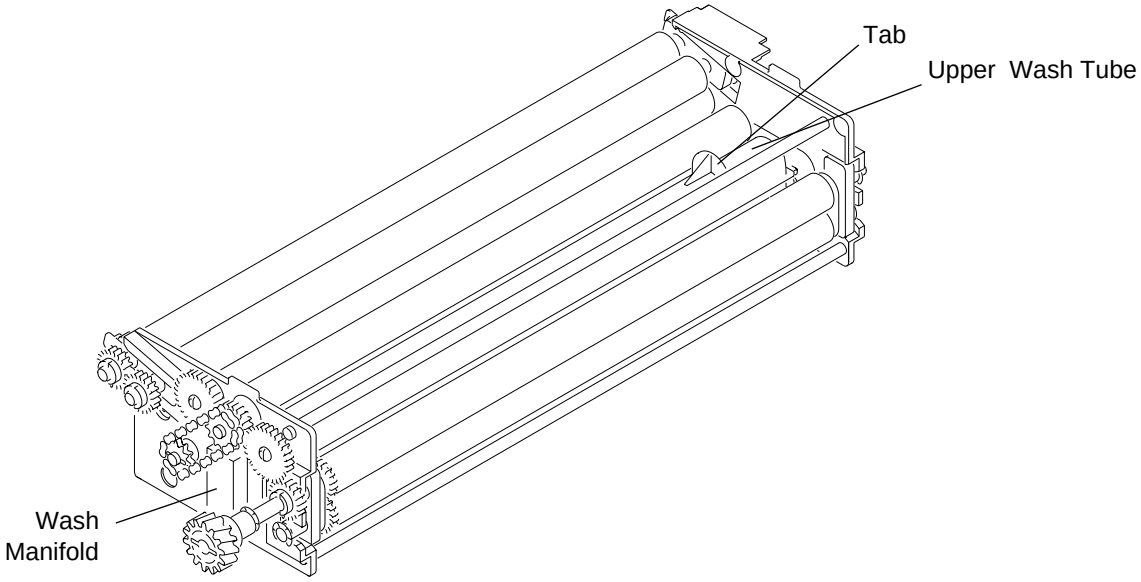
[1] Check that:

- PROCESSOR is de-energized
- TOP COVER is removed

[2] Remove the RACK from the PROCESSOR.

[3] Remove the EXIT SQUEEGEE ROLLER ASSEMBLY from the RACK.

Figure 15 **Removing the EXIT SQUEEGEE ROLLER ASSEMBLY**



H130_0254BCA
H130_0254BA

Disassembling the Non-Drive End of the EXIT SQUEEGEE ROLLER ASSEMBLY of the WASH RACK

[4] Remove from the 2 SHAFTS:

a. 2 E-RINGS

b. 2 SPACERS - 1 SPACER has a TAB, note its location

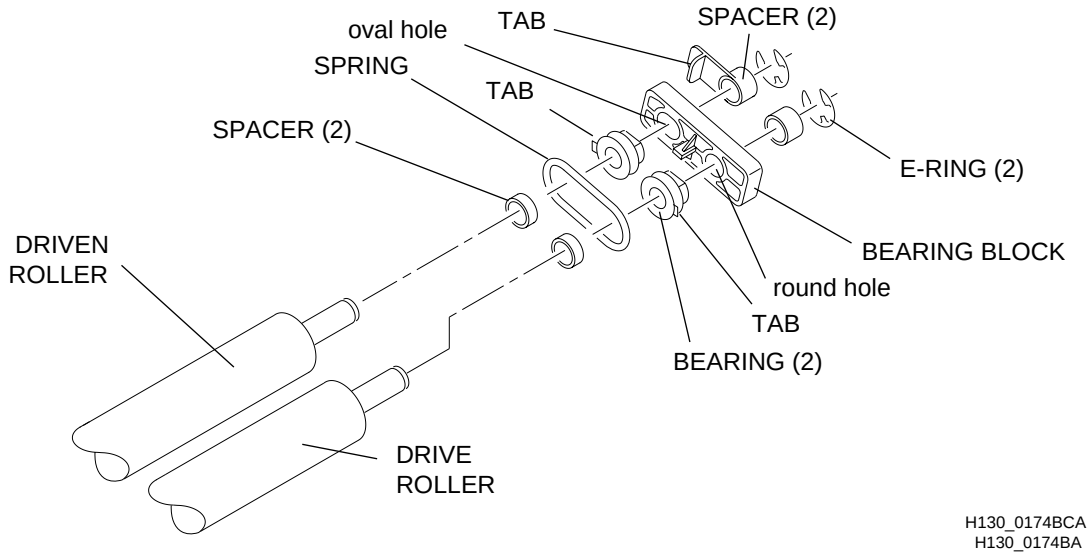
c. BEARING BLOCK - note the orientation

d. 2 BEARINGS with the SPRING - note the orientation of the TAB on the BEARINGS

- remove the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARING BLOCK

e. 2 SPACERS

Figure 16 **Non-Drive End of the EXIT SQUEEGEE ROLLER ASSEMBLY of the WASH RACK**



Disassembling the Drive End of the EXIT SQUEEGEE ROLLER ASSEMBLY of the WASH RACK

[5] Remove from the 2 SHAFTS:

a. 2 ROLL PINS - use a ROLL PIN PUNCH TL-1388

b. 2 GEARS - note the orientation

c. 2 E-RINGS

d. 2 SPACERS - 1 SPACER has a TAB, note its location

e. BEARING BLOCK - note the orientation

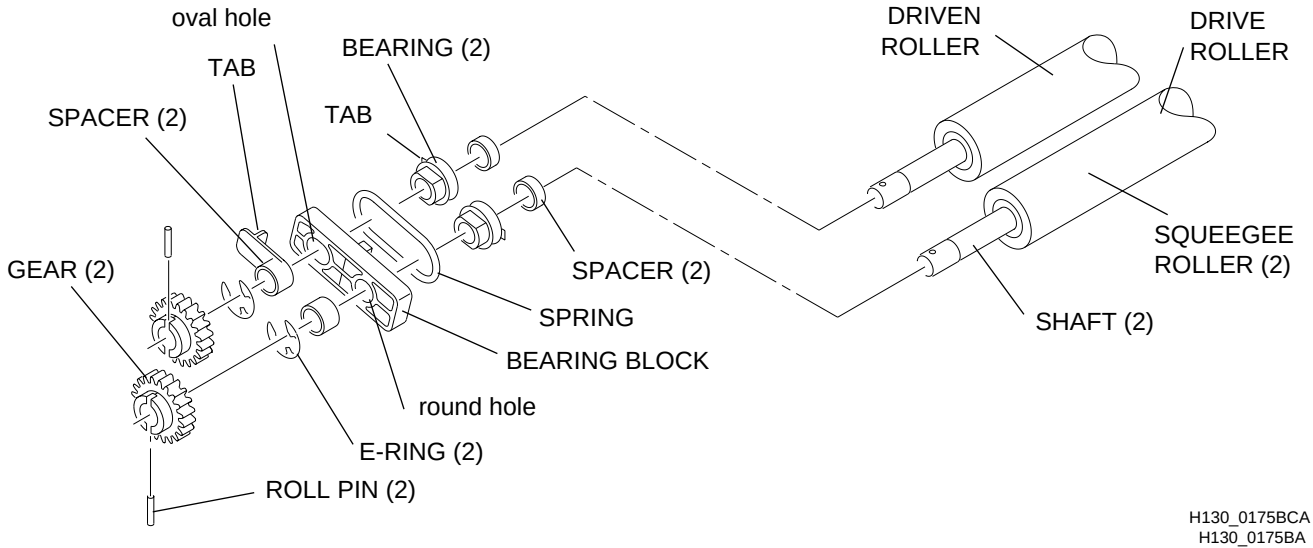
f. 2 BEARINGS with SPRING - note the orientation of the TAB on the BEARINGS

- remove the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARINGS

g. 2 SPACERS

[6] If necessary, replace the SHAFT and SQUEEGEE ROLLER ASSEMBLY.

Figure 17 **Drive End of the EXIT SQUEEGEE ROLLER ASSEMBLY of the WASH RACK**



Assembling the Non-Drive End of the EXIT SQUEEGEE ROLLER ASSEMBLY of the WASH RACK

[7] Install on the SHAFTS:

a. 2 SPACERS

b. 2 BEARINGS with the SPRING - check that the BEARINGS are oriented with the TABS to the outside

- install the BEARINGS with the narrow FLANGE against the ROLLER
- install the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARING BLOCK

c. BEARING BLOCK - check orientation

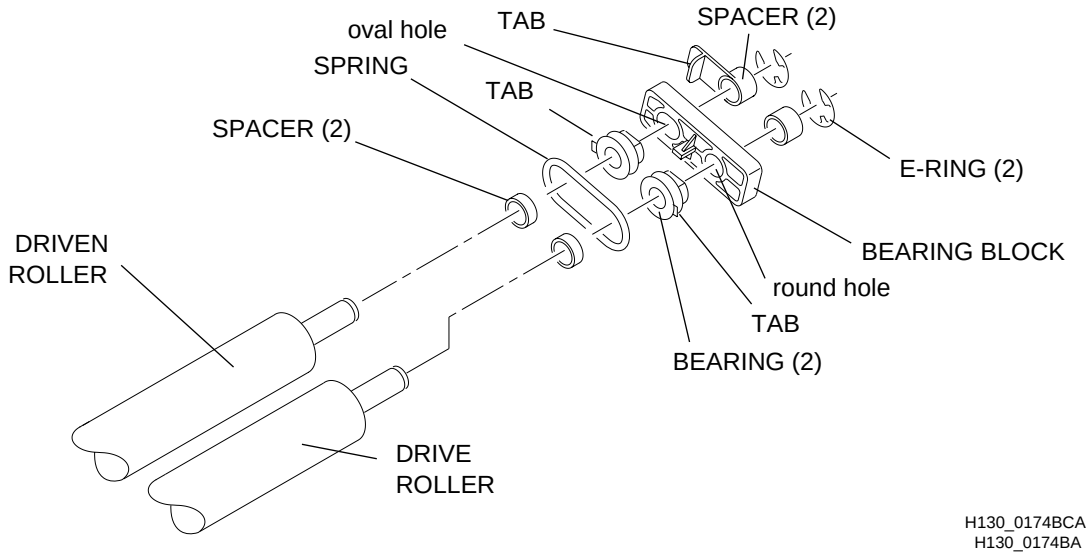
- insert the DRIVE SHAFT into the ROUND HOLE
- insert the DRIVEN SHAFT into the OVAL HOLE

d. 2 SPACERS - 1 SPACER has a TAB, install it on the DRIVEN ROLLER SHAFT so that the TAB rests on the BEARING BLOCK

- install the SPACER so the TAB is on the outside

e. 2 E-RINGS

Figure 18 **Non-Drive End of the EXIT SQUEEGEE ROLLER ASSEMBLY of the WASH RACK**



Assembling the Drive End of the EXIT SQUEEGEE ROLLER ASSEMBLY of the WASH RACK

Note

When assembling the parts onto the SHAFTS, keep the holes in the SHAFT facing up for easier insertion of the ROLL PINS.

[8] Install on the SHAFTS:

a. 2 SPACERS

b. 2 BEARINGS with the SPRING - check that the BEARINGS are oriented with the TABS to the outside

- install the BEARINGS with the narrow FLANGE against the ROLLER
- install the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARINGS

c. BEARING BLOCK - check orientation

- insert the DRIVE SHAFT into the ROUND HOLE
- insert the DRIVEN SHAFT into the OVAL HOLE

[9] Install on the SHAFTS:

a. 2 SPACERS - 1 SPACER has a TAB, install it on the DRIVEN ROLLER SHAFT so that the TAB rests on the BEARING BLOCK

b. 2 E-RINGS

c. 2 GEARS

- install the GEARS so that the holes in the GEARS align with the holes in the SHAFT

d. 2 ROLL PINS - use a ROLL PIN PUNCH TL-1388

[10] Check that the GEARS of the ROLLER ASSEMBLY engage correctly.

[11] Install the EXIT SQUEEGEE ROLLER ASSEMBLY into the WASH RACK.

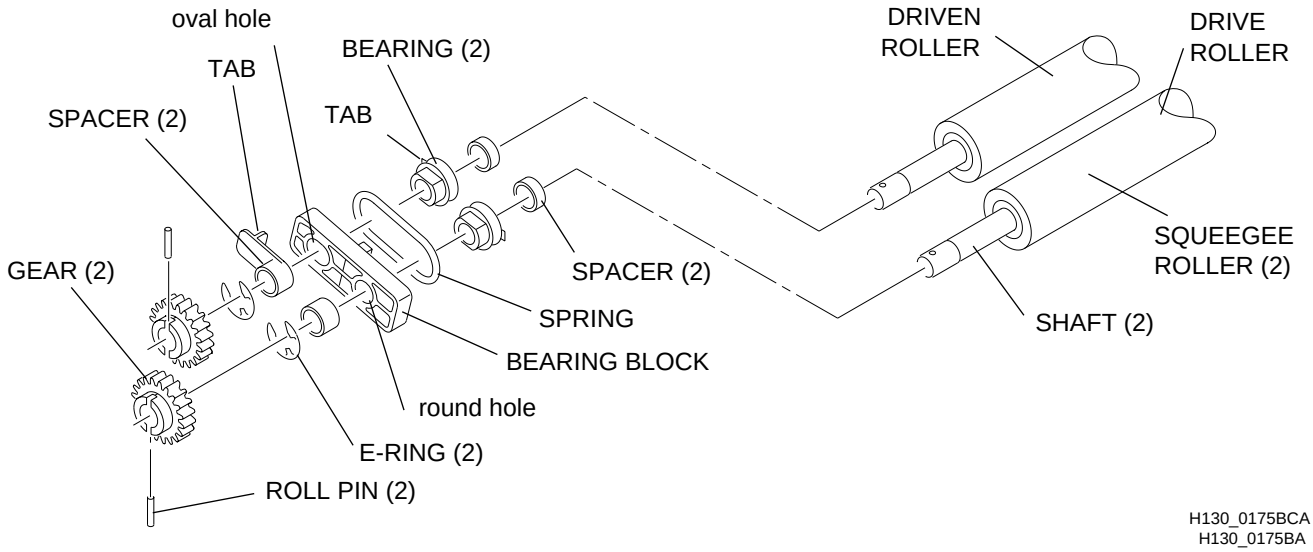
[12] Check that all ROLLERS turn freely.

[13] Install the WASH RACK into the PROCESSOR.

[14] Check that the DRIVE GEAR of the ROLLER ASSEMBLY engages with the WORM of the MAIN DRIVE SHAFT correctly.

[15] Press firmly down on the SIDEPLATE to correctly seat the O-RING on the WASH MANIFOLD. See Figure 20 on Page 27.

Figure 19 **Drive End of the EXIT SQUEEGEE ROLLER ASSEMBLY of the WASH RACK**



CENTRAL DRIVE ROLLER PAIR of the WASH RACK

Disassembling a CENTRAL DRIVE ROLLER PAIR of the WASH RACK

Note

See Figure 20 on Page 27 when doing this procedure.

[1] Check that:

- PROCESSOR is de-energized
- TOP COVER is removed

[2] Remove the WASH RACK from the PROCESSOR. To prevent contamination of the processing solutions, use the DRIP TRAY and the SPLASH GUARD (FIXER RACK only).

[3] Remove the EXIT SQUEEGEE ROLLER ASSEMBLY.

[4] Locate the CENTRAL DRIVE ROLLER in need of repair.

[5] From the **Non-Drive** end of each SHAFT remove:

a. 2 E-RINGS

b. 2 BEARINGS with the SPRING - note the orientation of the TAB on the BEARINGS

- Remove the BEARINGS and the SPRING as an ASSEMBLY. Do not stretch the SPRING over the BEARINGS.

[6] From the **Drive** end of the ROLLER, remove the SHOULDER SCREW securing the GEAR at the upper end of the CHAIN. Remove the GEAR.

[7] Remove the CHAIN from the GEAR on the lower end of the CHAIN.

[8] Install the GEAR and SHOULDER SCREW removed in Step 6 so that the CHAIN hangs freely.

[9] Carefully, slide the SHAFTS out of the ROLLERS.

[10] Only if necessary, remove from **Drive** end of the SHAFTS:

a. 2 E-RINGS

b. ROLL PIN - use ROLL PIN PUNCH TL-1388

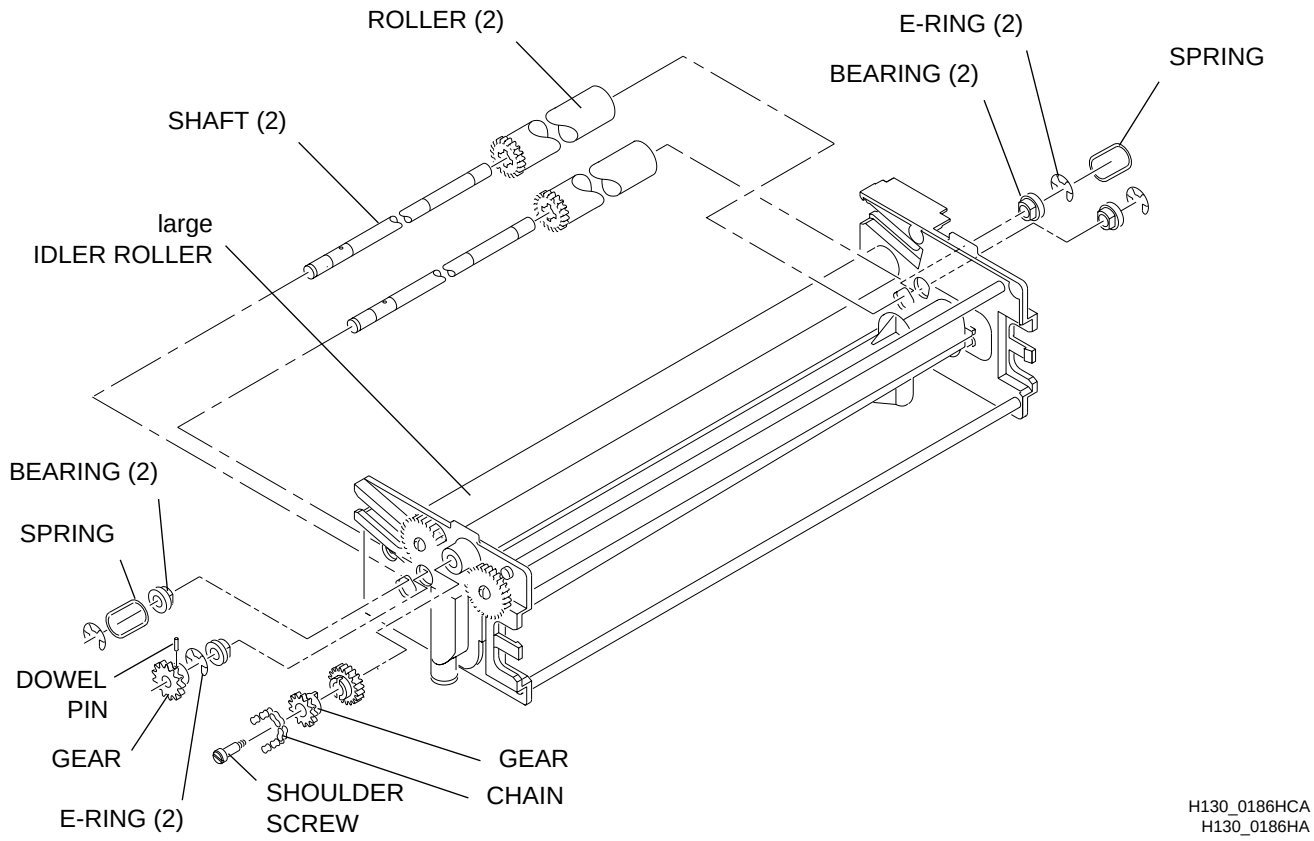
c. GEAR

d. 2 BEARINGS with the SPRING - note the orientation of the TAB on the BEARINGS

- Remove the BEARINGS and the SPRING as an ASSEMBLY. Do not stretch the SPRING over the BEARINGS.

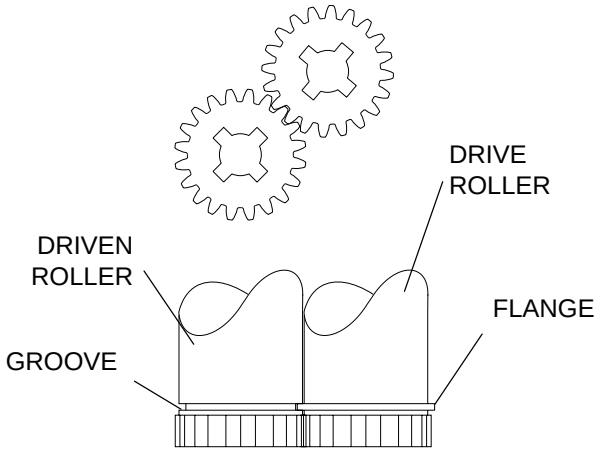
[11] If necessary, remove the ROLLERS from the WASH RACK. Install new ROLLERS.

Figure 20 **CENTRAL DRIVE ROLLER PAIR of the WASH RACK**



Assembling a CENTRAL DRIVE ROLLER PAIR of the WASH RACK

Figure 21 **Checking that the ROLLERS Engage**



[12] Install on the **Drive** end of the SHAFTS:

a. 2 BEARINGS with the SPRING - check that the BEARINGS are oriented with the TABS to the outside

- install the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARINGS

b. GEAR - if removed

c. DOWEL PIN - if removed

d. 2 E-RINGS - if removed

[13] Slide the SHAFTS through the ROLLERS in the WASH RACK.

[14] Check that the ROLLERS turn freely.

[15] On the **Non-Drive** side of the SHAFTS install:

a. 2 BEARINGS with the SPRING - check that the BEARINGS are oriented with the TABS to the outside

- install the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARINGS

b. 2 E-RINGS

[16] Remove the SHOULDER SCREW and the GEAR at the upper end of the CHAIN. Place the CHAIN on the GEAR of the ROLLER PAIR.

[17] Install:

- SHOULDER SCREW
- GEAR
- CHAIN

[18] Check that the GEARS on the SHAFTS of the CENTRAL DRIVE PAIR engage correctly.

[19] Install the EXIT SQUEEGEE ROLLER ASSEMBLY.

[20] Check that all the ROLLERS turn freely.

[21] Check that the FLANGE of the ROLLER engages with the GROOVE on the other ROLLER. See the figure.

[22] Install the WASH RACK into the PROCESSOR.

[23] Check that the DRIVE GEAR on the WASH RACK engages with the WORM on the MAIN DRIVE SHAFT correctly.

[24] Press firmly down on the SIDEPLATE to correctly seat the O-RING on the WASH MANIFOLD. See Figure 20 on Page 27.

Disassembling an IDLER ROLLER of the WASH RACK

Note

See Figure 22 on Page 29 when doing this procedure. The large IDLER ROLLER is located below the CENTRAL DRIVE ROLLER PAIR.

[25] Check that:

- PROCESSOR is de-energized
- TOP COVER is removed

[26] Remove the WASH RACK from the PROCESSOR.

[27] Remove:

- ENTRANCE ROLLER ASSEMBLY
- EXIT SQUEEGEE ROLLER ASSEMBLY
- 2 WASH TUBES

[28] Loosen the SCREWS securing the TIE RODS on the **Non-Drive** end of the RACK.

[29] From the **Non-Drive** end of the CENTRAL DRIVE ROLLER PAIR, remove:

- 2 E-RINGS
- 2 BEARINGS with the SPRING - note the orientation of the TABS on the BEARINGS
  - remove the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARINGS

[30] Loosen the SCREW from the **Non-Drive** end of the large IDLER ROLLER.

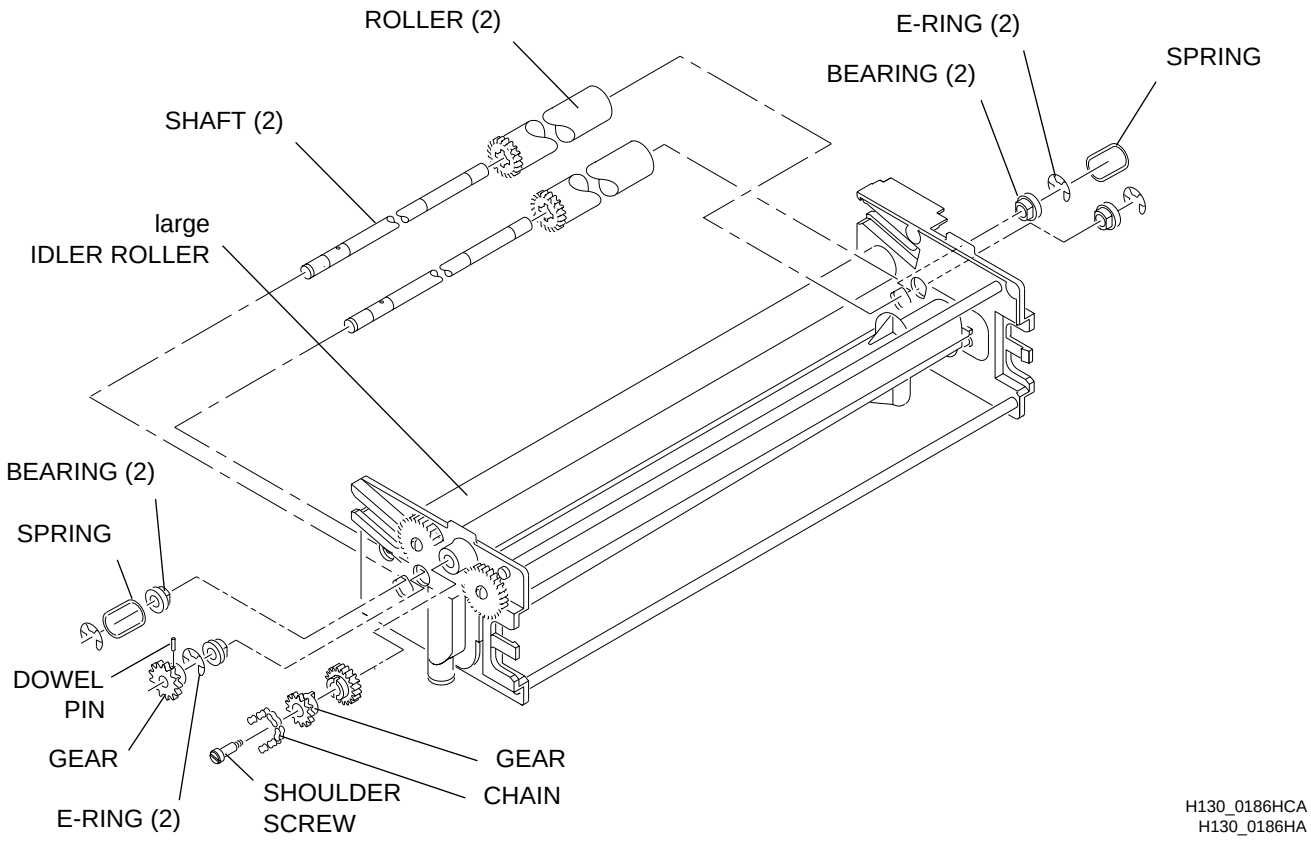
[31] Move the **Non-Drive** SIDEPLATE away from the ASSEMBLY, allowing the small IDLER ROLLER to slip off the STUD.

[32] Install a new small IDLER ROLLER by pushing it between the STUDS in the SIDEPLATE.

[33] Check the WASH RACK for squareness before you tighten the SCREWS securing the TIE RODS and the large IDLER ROLLER. For details, see Page 23.

[34] Reverse the steps to reassemble the WASH RACK.

Figure 22 **IDLER ROLLER of the WASH RACK**



WASH TUBES and GASKETS - WASH RACK

Note

See Figure 23 on Page 31 when doing this procedure.

[1] Check that:

- PROCESSOR is de-energized
- TOP COVER is removed

[2] Remove:

- DRYER RACK
- WASH RACK

[3] Locate the TABS on the WASH TUBES.

(a) Use the TABS to push the UPPER WASH TUBE and the LOWER WASH TUBE toward the **Drive** side of the WASH RACK.

(b) Remove the WASH TUBES from the WASH RACK by lifting the **Non-Drive** end of the WASH TUBES first.

[4] Rinse the WASH TUBES with warm running water.

[5] Place the open end of the WASH TUBES directly under the stream of water. Check that water exits equally from all the holes in the WASH TUBES.

Caution

- Do **not** enlarge the size of the openings in the WASH TUBES.
- Do **not** scratch the smooth surface of the WASH TUBES.

[6] If any of the holes are blocked, remove the obstruction from the inside of the WASH TUBE using BOTTLE BRUSH TL-4833 or a TOOTHBRUSH.

[7] If the WASH TUBES are severely blocked, place the WASH TUBES in a solution of 50% vinegar and 50% water for approximately 10 minutes. Rinse the WASH TUBES thoroughly with plenty of warm water.

[8] Do Steps 5 and 6.

[9] Remove and check the rubber GASKETS that are installed in the **DRIVE** SIDEPLATE.

(a) If necessary, install new GASKETS.

[10] Remove and check the O-RING on the WASH MANIFOLD.

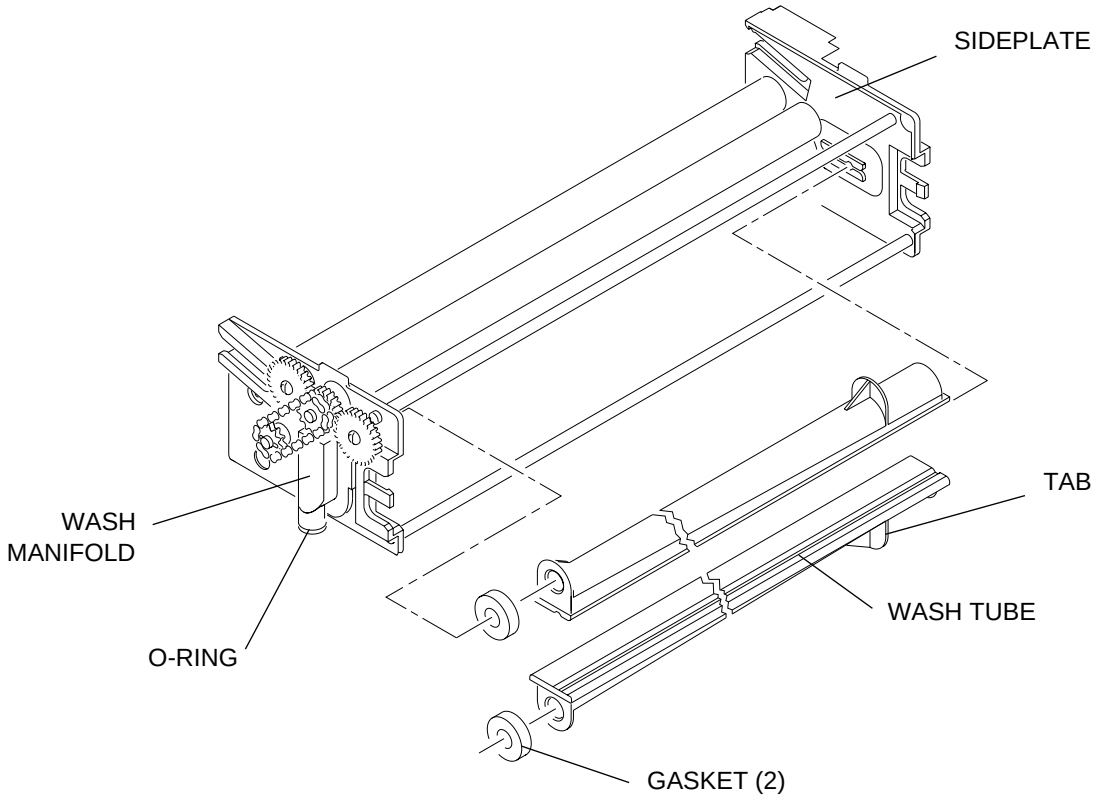
(a) If necessary, install a new O-RING.

[11] Reverse the steps to install the WASH TUBES and to return the PROCESSOR to normal operation.

Caution

The SIDEPLATE on the **Non-Drive** end of the WASH RACK has a notch to ensure the correct orientation of the WASH TUBES. When installing the WASH TUBES, check that they are oriented correctly and that they seat firmly in the SIDEPLATE.

Figure 23 **WASH TUBES of the WASH RACK**

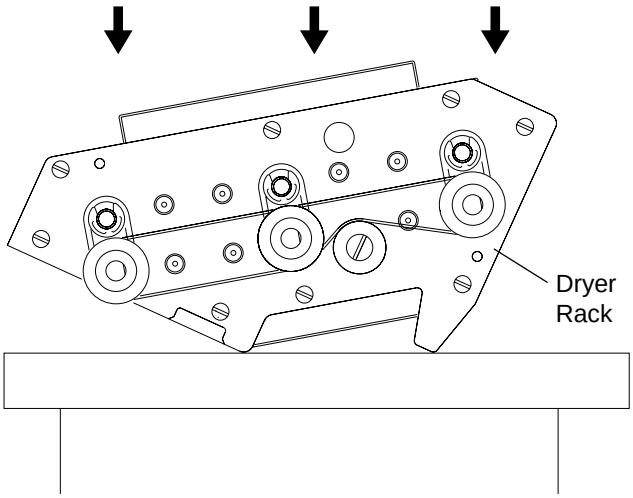


H130_0185HCA
H130_0185HA

Repairing the DRYER RACK

Adjusting the DRYER RACK for Squareness

Figure 24 **Adjusting the DRYER RACK for Squareness**



H130_0199ACA
H130_0199AA

[1] Remove the DRYER RACK from the PROCESSOR.

[2] Place the DRYER RACK on a flat work surface.

[3] Loosen the SCREWS on the ends of the 4 TIE RODS.

[4] Loosen the SCREWS securing the TOP and BOTTOM COVERS.

[5] Check that the 2 SIDEPLATES touch the flat work surface evenly.

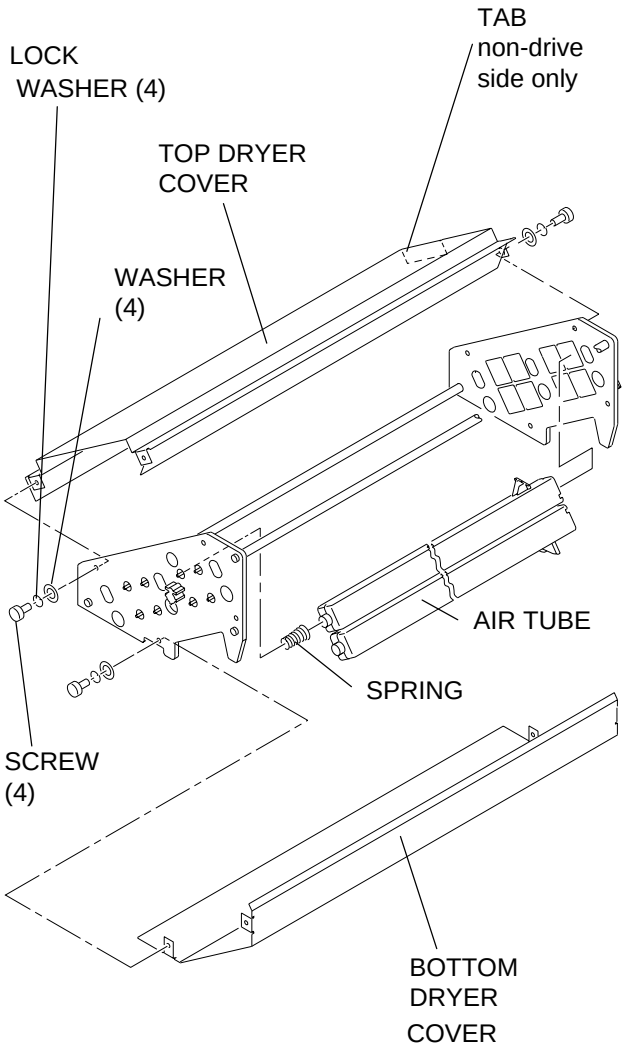
[6] Twist the RACK as necessary.

[7] Tighten all the SCREWS.

[8] Install the DRYER RACK into the PROCESSOR.

Removing the DRYER AIR TUBES

Figure 25 **Removing the DRYER COVERS**



[1] Remove the DRYER RACK from the PROCESSOR.

[2] Remove the TOP and BOTTOM COVERS by removing the 8 SCREWS, WASHERS, and LOCK WASHERS securing them to the DRYER RACK.

Figure 26 **Removing the DRYER RACK**

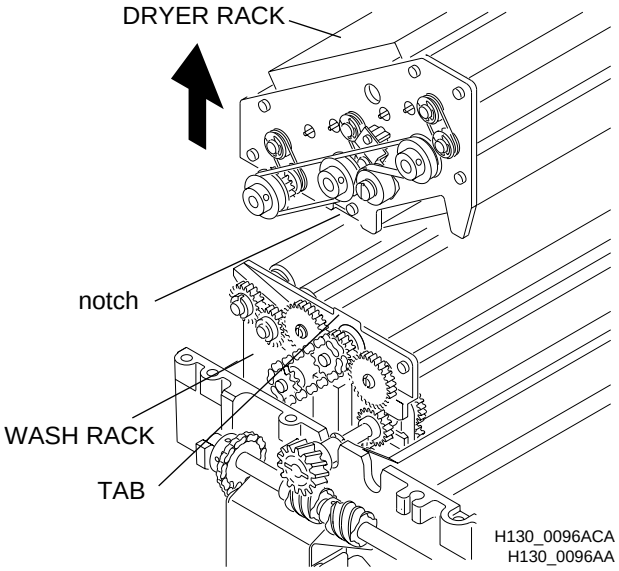
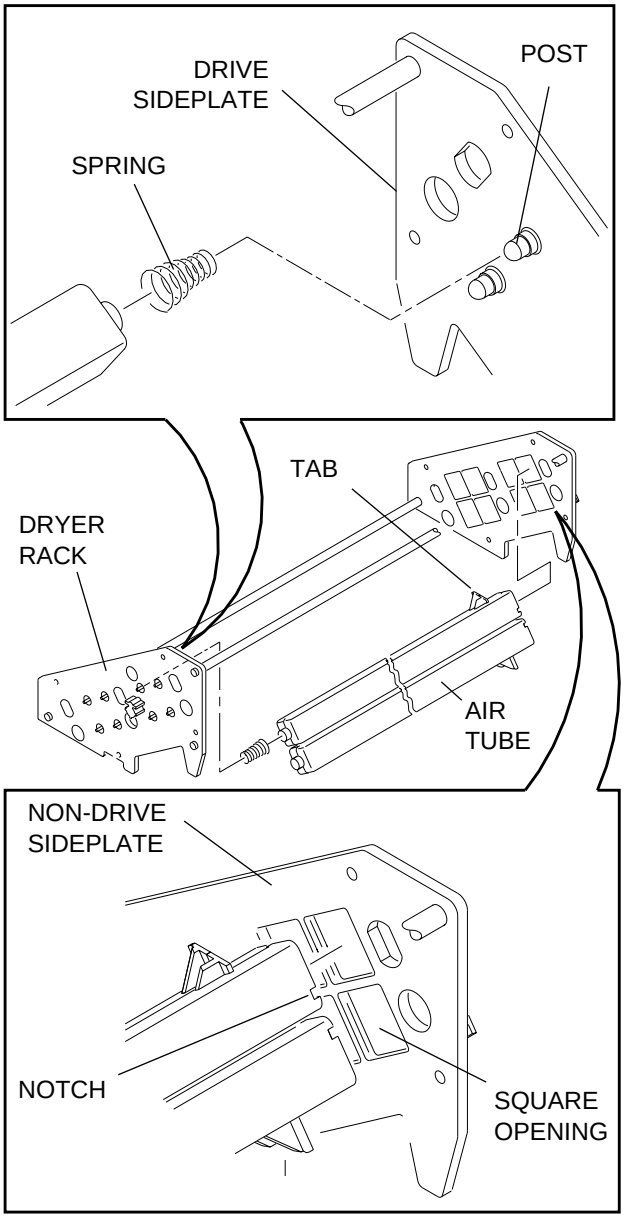


Figure 27 **Installing the AIR TUBES**



H130_0069CCA
H130_0069CA

[3] Use the TAB on the AIR TUBE to push the AIR TUBE toward the **Drive** side of the DRYER RACK in order to release the tension on the SPRING.

[4] Remove all 8 AIR TUBES in the same way. All 8 AIR TUBES are identical.

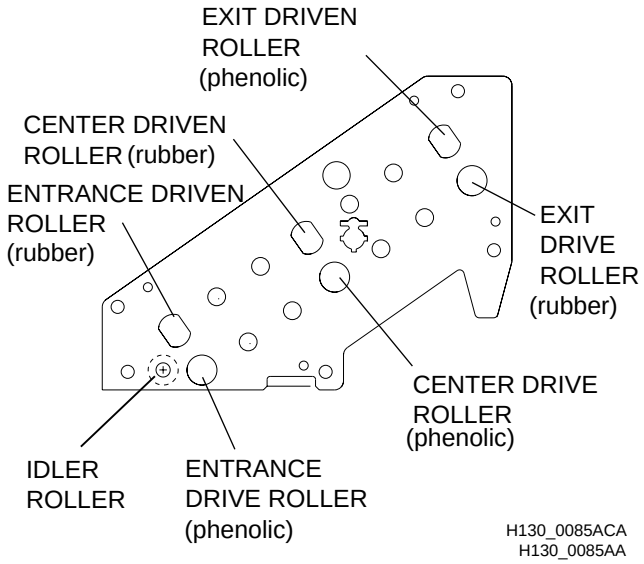
Important

When installing the AIR TUBES be sure that:

- the SLOT in the AIR TUBES points in toward the center of the DRYER RACK
  - the AIR TUBES are correctly centered on the POSTS in the **DRIVE** SIDEPLATE
- all AIR TUBES are properly seated in the SQUARE OPENINGS in the **NON-DRIVE** SIDEPLATE
  - the ends of the AIR TUBES have NOTCHES
  - the OPENING in the **NON-DRIVE** SIDEPLATE has TABS

Removing the DRYER ROLLERS

Figure 28 **Identifying Pairs of ROLLERS**



Note

See the figure when identifying the DRYER ROLLER PAIRS.

There are 3 DRYER ROLLER PAIRS and one IDLER ROLLER:

- ENTRANCE PAIR
- CENTER PAIR
- EXIT PAIR

There are 2 types of DRYER ROLLERS:

- DRIVE ROLLERS
- DRIVEN ROLLERS

The DRIVE ROLLER, along with the DRIVEN ROLLER, make up a ROLLER PAIR. See the figure to identify the DRYER ROLLER PAIRS.

The DRYER ROLLER PAIRS are made from 2 different materials:

- rubber
- phenolic

Note

See Figure 27 on Page 34 to identify the parts in the steps below.

[1] Reduce the tension on the IDLER ASSEMBLY by loosening the SCREW and sliding the IDLER ASSEMBLY away from the DRIVE BELT.

[2] Remove the DRIVE BELT from the PULLEYS.

Note

Removal of the ROLLERS and SHAFTS is easier if you remove them from the **Non-Drive** side of the ROLLER ASSEMBLY.

[3] Loosen the SETSCREWS that secure the PULLEY and remove the PULLEY.

[4] If you are removing the ENTRANCE ROLLER PAIR, remove the GEAR from the **Drive** end of the ROLLER PAIR.

[5] Remove the following parts from each end of both SHAFTS in the ROLLER PAIR:

- 2 E-RINGS
- 2 BEARINGS with the SPRING
  - remove the BEARINGS and the SPRING as an ASSEMBLY; to prevent damage to the SPRING, do not stretch the SPRING over the BEARINGS

[6] Slide the SHAFT out from the ROLLER.

[7] Remove the ROLLER from the DRYER ASSEMBLY.

[8] Reverse the steps above to install new DRYER AIR TUBES, ROLLERS, and DRYER COVERS.

Note

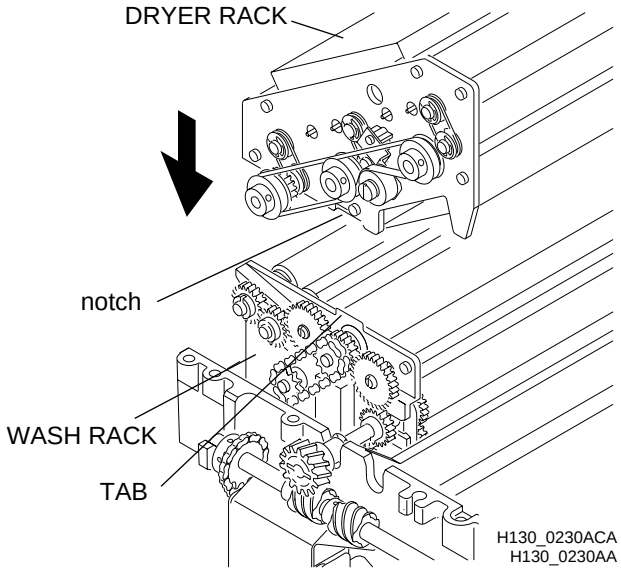
The TOP DRYER COVER has a TAB on the **Non-Drive** end. Check that the TOP DRYER COVER is oriented correctly. See Figure 25 on Page 33.

[9] Check that the tension of the DRIVE BELT is correct. The BELT should be tight and should not slip.

[10] Check the DRYER RACK for squareness. See the procedure on Page 32.

[11] Check that all the ROLLERS turn freely.

Figure 29 **Installing the DRYER RACK**



[12] Install the DRYER RACK on top of the WASH RACK.

(a) Check that the DRYER RACK is seated correctly.

[13] Check that the DRIVE GEAR on the DRYER RACK engage correctly with the GEAR on the WASH RACK.

[14] Check that the notch on the SIDEPLATES of the DRYER RACK engage with the TABS on the SIDEPLATES of the WASH RACK.

[15] Remove the IDLER ROLLER.

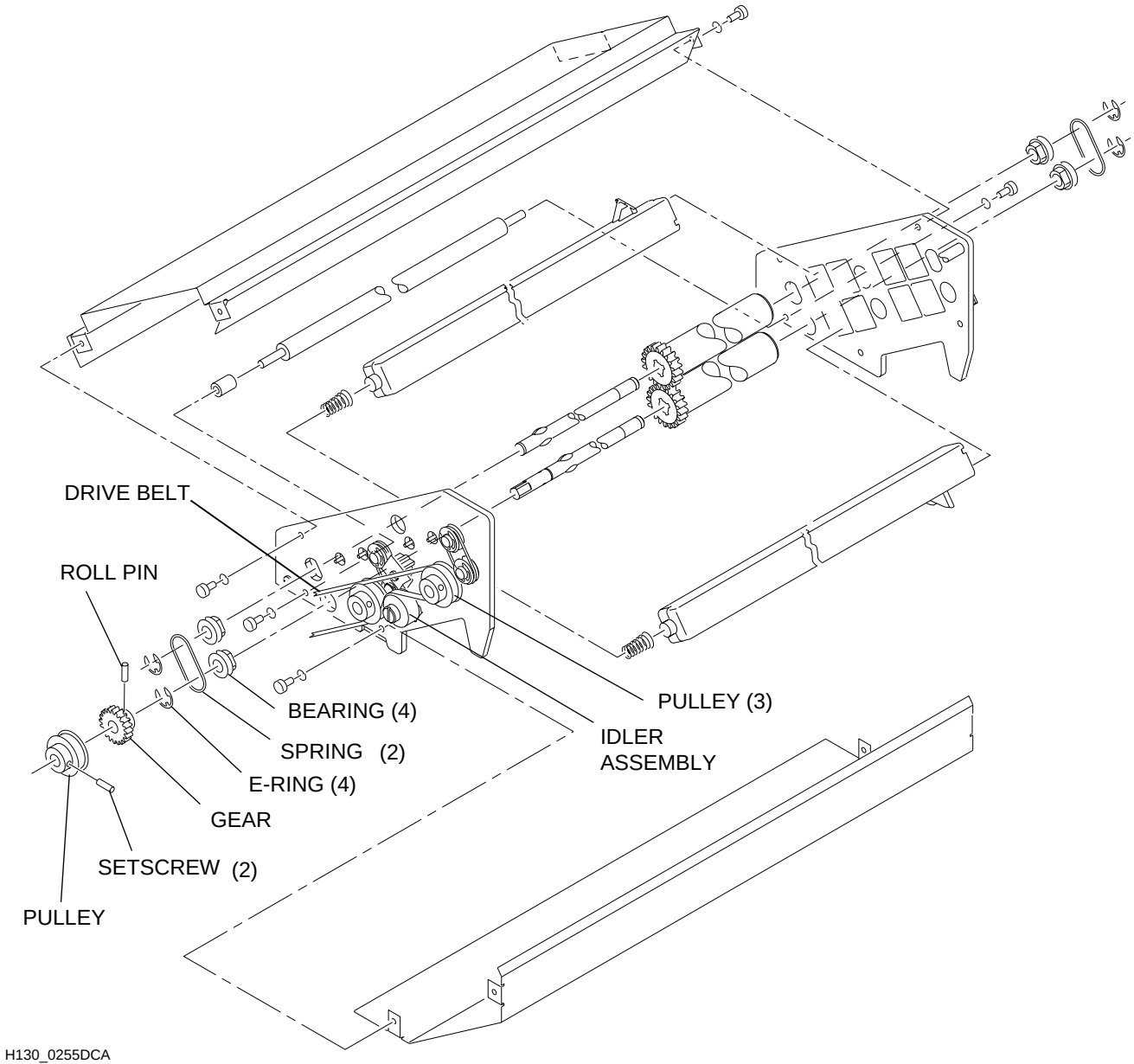
(a) Loosen the 2 SCREWS.

(b) Slide the SHAFT out from the IDLER ROLLER.

(c) Remove the SPACER from the Drive side and the IDLER ROLLER.

(d) Reverse Step 15 to install a new IDLER ROLLER.

Figure 30 **Repairing Parts on a DRYER ROLLER**



Section 3: DRYER

Removing the DRYER THERMISTOR (RT2), AIR VANE SWITCH (S4), DRYER HEATER (R2), and DRYER BLOWER MOTOR (B1)

Important

Only qualified service personnel should service the PROCESSOR.

Important

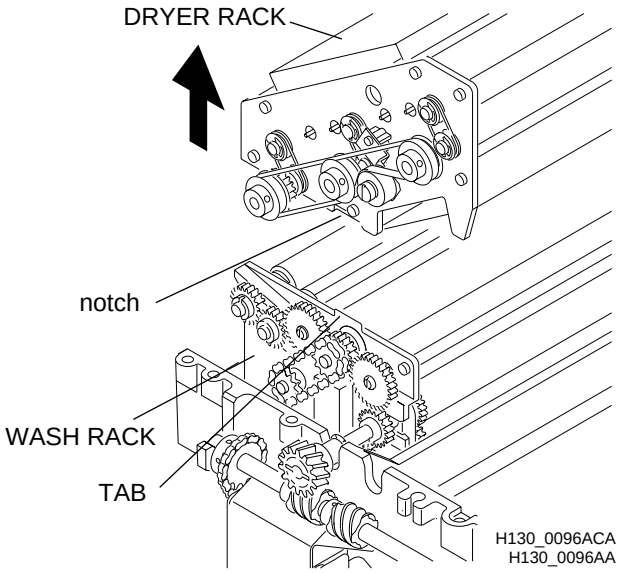
All the procedures in this section require that you de-energize the PROCESSOR and remove the TOP COVER before beginning the first step of the service procedure.

[1] Remove the NON-DRIVE SIDE ACCESS PANEL by loosening the 2 SCREWS.

[2] Remove:

- DRYER RACK
- WASH RACK

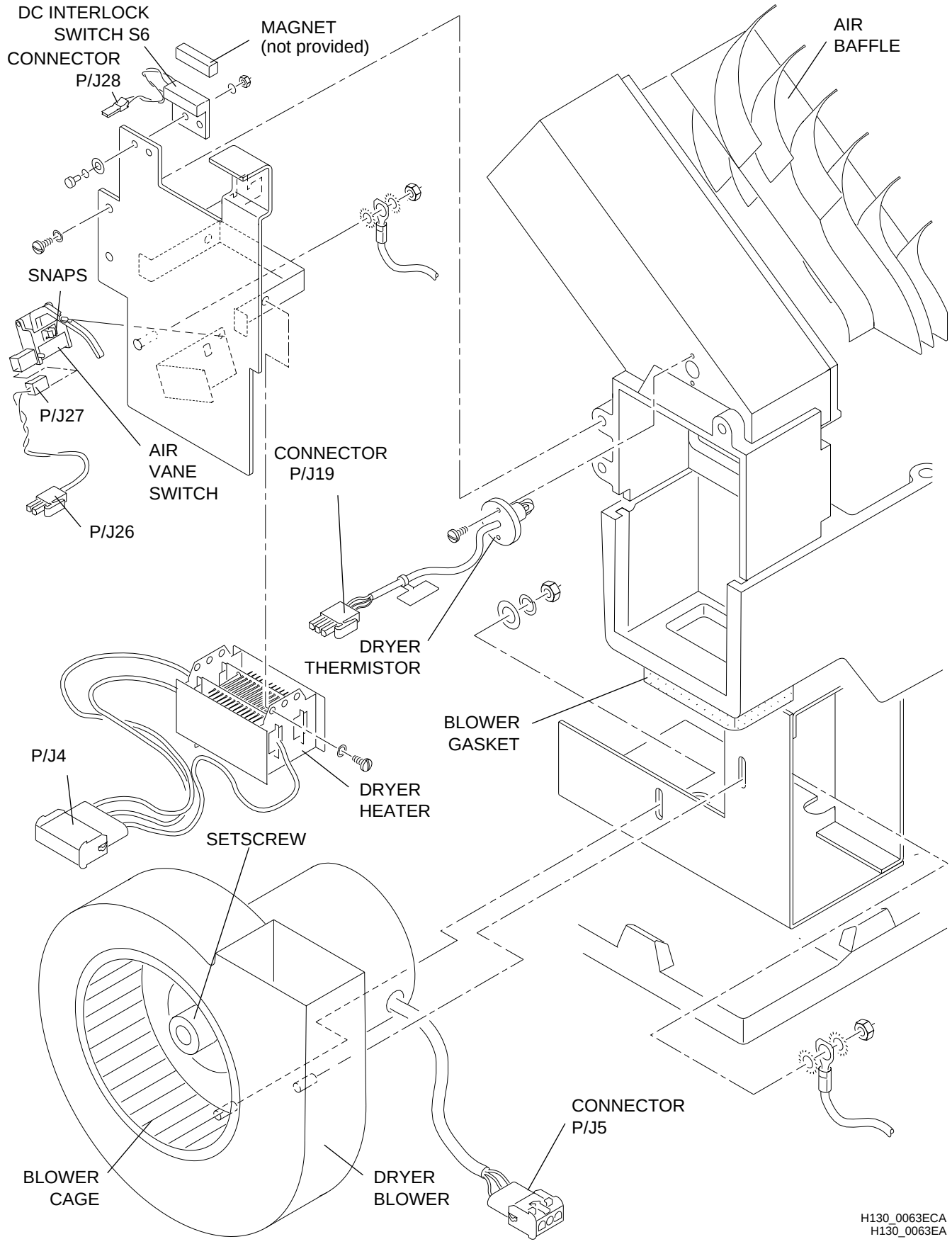
Figure 31 **Removing the RACKS**



[3] In order to remove dryer components, disconnect the CONNECTORS listed below. See Figure 32 on Page 39 for the location of the components.

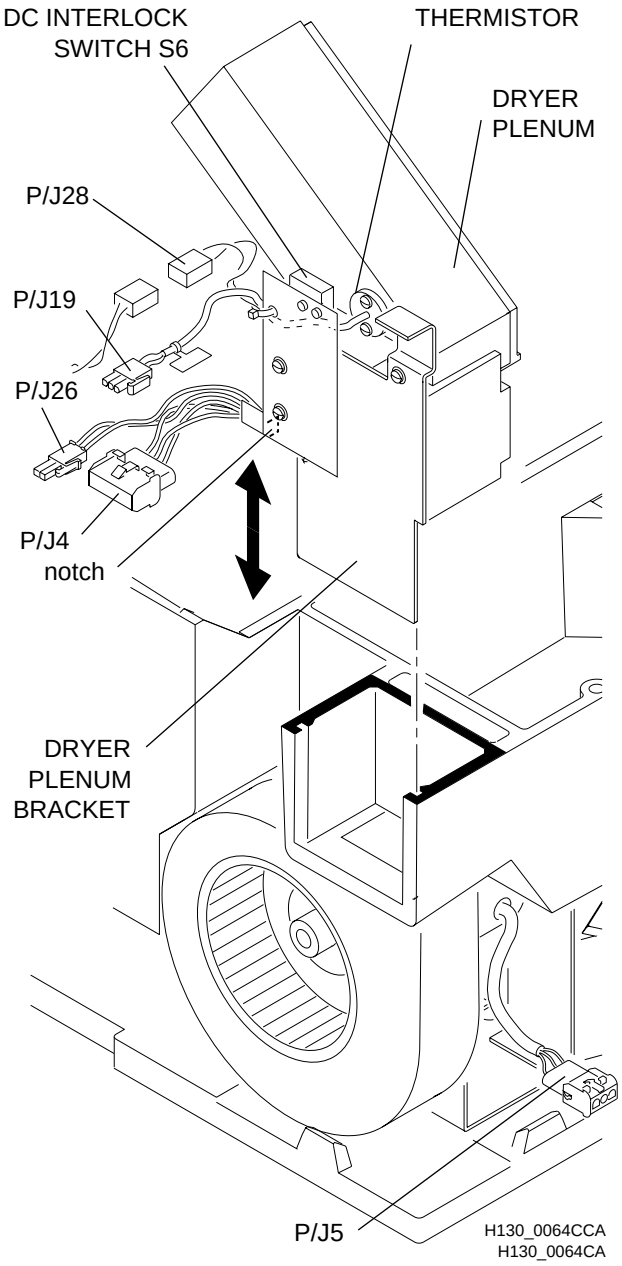
DRYER COMPONENT	CONNECTOR NUMBER
DRYER THERMISTOR	P/J19
AIR VANE SWITCH	P/J26
DRYER HEATER	P/J4
DRYER BLOWER	P/J5
DC INTERLOCK SWITCH S6	P/J28

Figure 32 **Disconnecting the DRYER Components**



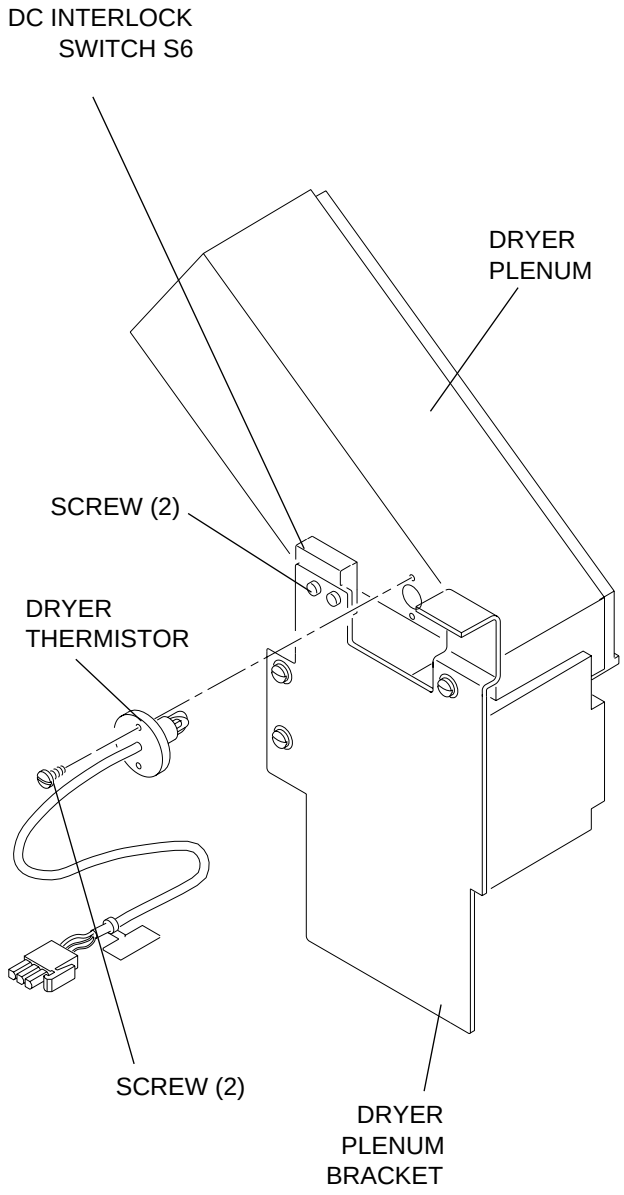
[4] Remove the DRYER PLENUM by lifting up on the PLENUM.

Figure 33 **Removing the DRYER PLENUM**



Removing the DC INTERLOCK SWITCH S6, the DRYER THERMISTOR, and the AIR VANE SWITCH

Figure 34 **Removing the DC INTERLOCK SWITCH S6, the DRYER THERMISTOR and the AIR VANE SWITCH**



[1] Disconnect CONNECTOR P/J28. See Figure 33 on Page 40 for the location of the CONNECTOR.

[2] Remove the 2 SCREWS securing the DC INTERLOCK SWITCH S6 to the DRYER PLENUM BRACKET.

[3] Install the new DC INTERLOCK SWITCH S6 to the DRYER PLENUM BRACKET.

[4] Connect CONNECTOR P/J28.

[5] Disconnect CONNECTOR P/J19. See Figure 33 on Page 40 for the location of the CONNECTOR.

[6] Remove the DRYER THERMISTOR from the DRYER PLENUM by removing the 2 SCREWS.

[7] Install the new DRYER THERMISTOR.

[8] Connect CONNECTOR P/J19.

[9] Disconnect CONNECTOR P/J26. See Figure 33 on Page 40 for the location of the CONNECTOR.

Caution

Do **not** remove the AIR VANE SWITCH unless absolutely necessary. Repeated removal and installation of the SWITCH may break the MOUNTING SNAPS requiring the installation of a new SWITCH.

[10] Remove the AIR VANE SWITCH from the DRYER PLENUM by releasing the 2 SNAPS on the MOUNTING BRACKET. See Figure 32 on Page 39.

[11] Connect CONNECTOR P/J26.

Removing the DRYER HEATER

Note

See Figure 33 on Page 40 for the location of the CONNECTOR.

[1] Disconnect the CONNECTORS listed below:

- P/J4
- P/J19
- P/J26
- P/J28

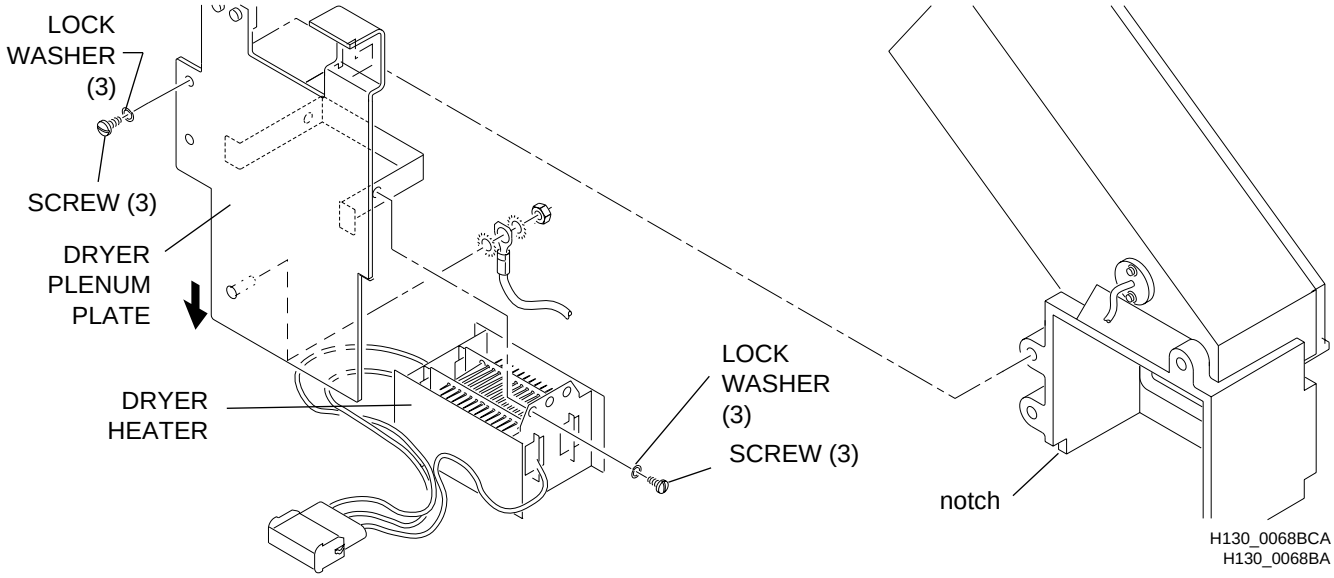
[2] Remove the DRYER PLENUM.

[3] Remove the DRYER PLENUM PLATE from the DRYER PLENUM by removing:

- 3 SCREWS
- 3 LOCK WASHERS

[4] Slide the DRYER PLENUM PLATE down to unlock the PLENUM BAFFLE so that you can remove the DRYER BAFFLE from the DRYER PLENUM.

Figure 35 **Removing the DRYER HEATER**



[5] Remove the WIRE TIES securing the DRYER HEATER wires.

[6] Remove the 3 SCREWS securing the DRYER HEATER on the DRYER PLENUM PLATE.

[7] Note and record the routing of the wires.

[8] Install a new DRYER HEATER onto the DRYER PLENUM PLATE.

Caution

Do **not** route the wire near any of the HEATER elements. Check that the wire does not touch the CASE of the HEATER.

[9] Route the wires as recorded in Step 7. See the figure for the correct routing.

[10] Position the wires in the notch of the DRYER PLENUM. See Figure 35 on Page 42. Use a WIRE TIE to secure the wires to the DRYER PLENUM PLATE. Use WIRE TIES, as necessary, to secure CONNECTOR P/J4.

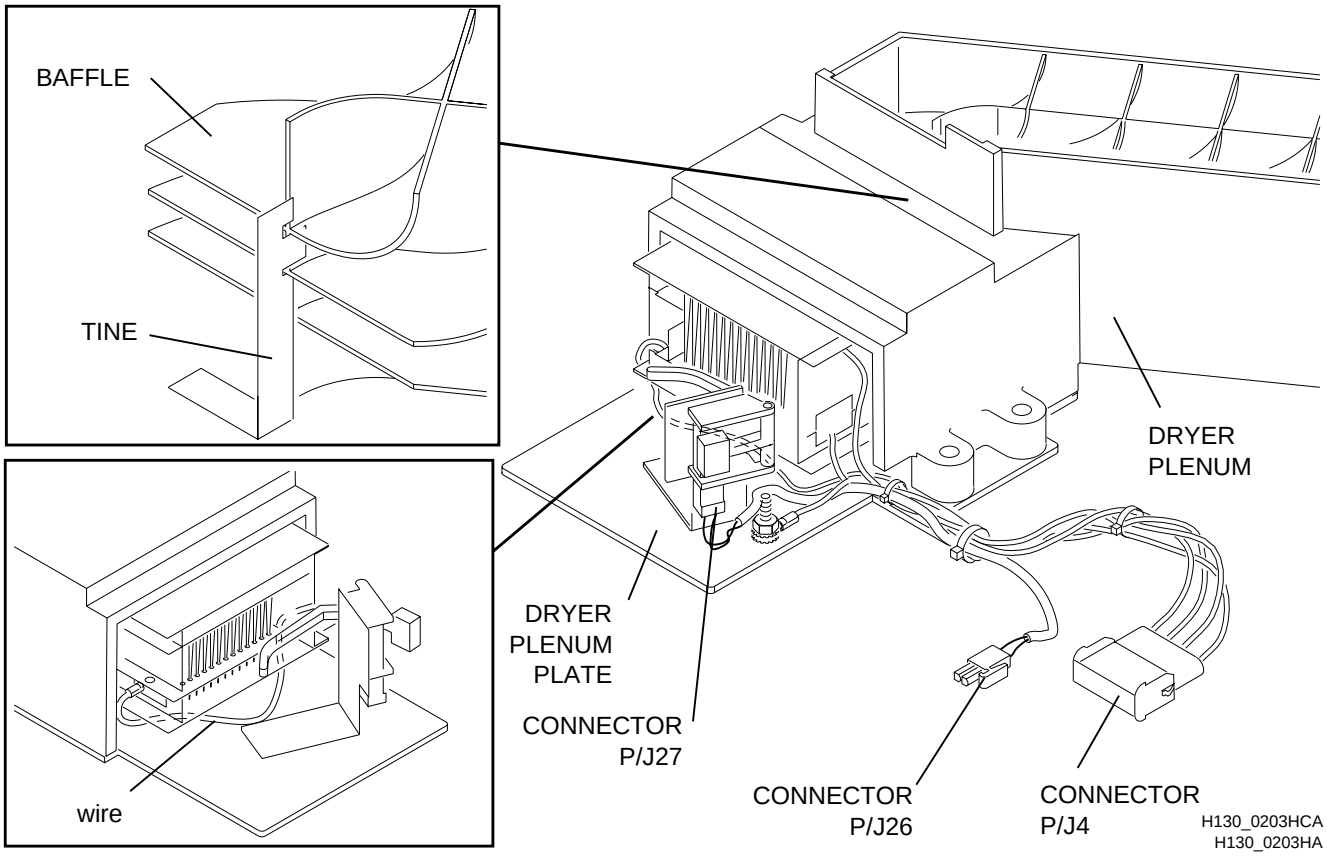
[11] Assemble the DRYER PLENUM PLATE into the DRYER PLENUM. Secure the BAFFLE into the PLENUM PLATE.

(a) Check that the TINE of the BAFFLE correctly engages with the DRYER PLENUM and that it is perpendicular to the DRYER PLENUM PLATE. See the figure.

[12] Install:

- 3 SCREWS
- 3 LOCK WASHERS

Figure 36 **Assembling the DRYER PLENUM PLATE**



Removing the DRYER BLOWER

[1] Remove the following parts from STUD 1 on the DRYER BLOWER:

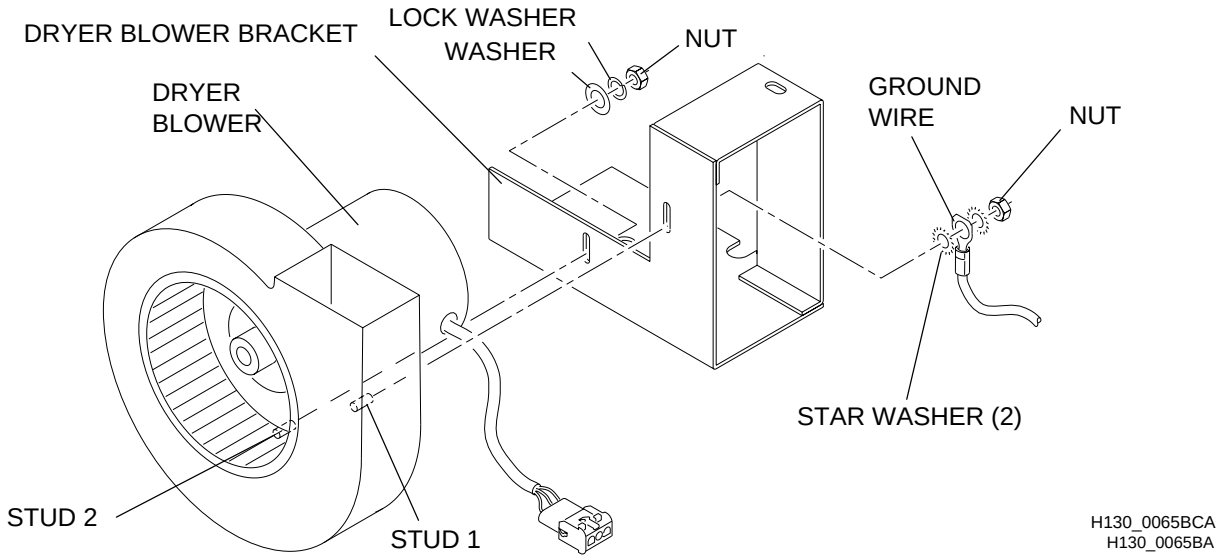
- NUT
- GROUND WIRE
- 2 STAR WASHERS

[2] Remove the following parts from STUD 2 of the DRYER BLOWER:

- NUT
- LOCK WASHER
- WASHER

[3] Carefully, remove the DRYER BLOWER by moving it toward the **Non-Drive** side of the PROCESSOR. Note the routing of the wires.

Figure 37 **Removing Parts from the STUDS 1 and 2 of the DRYER BLOWER**



Note

If you removed the BLOWER GASKET, install a new GASKET. **Do not reuse an old GASKET.**

[4] Install a new BLOWER GASKET, adhesive side up, onto the DRYER BLOWER by doing the steps below.

(a) Place the BLOWER GASKET around the exhaust end of the DRYER BLOWER.

(b) Insert the DRYER BLOWER into the BRACKET.

Caution

- When installing the parts onto STUD 1, be sure to install a STAR WASHER between the GROUND WIRE and the NUT to ensure correct grounding.
- Do not overtighten the NUTS on the 2 STUDS.

(c) Loosely install the parts removed in Step 1 onto STUD 1.

(d) Loosely install the parts removed in Step 2 onto STUD 2.

(e) Raise the DRYER BLOWER to its highest position.

(f) Rotate the DRYER BLOWER so that the opening in the exhaust end of the BLOWER aligns with the opening in the PROCESSOR TANK.

(g) Tighten the NUTS.

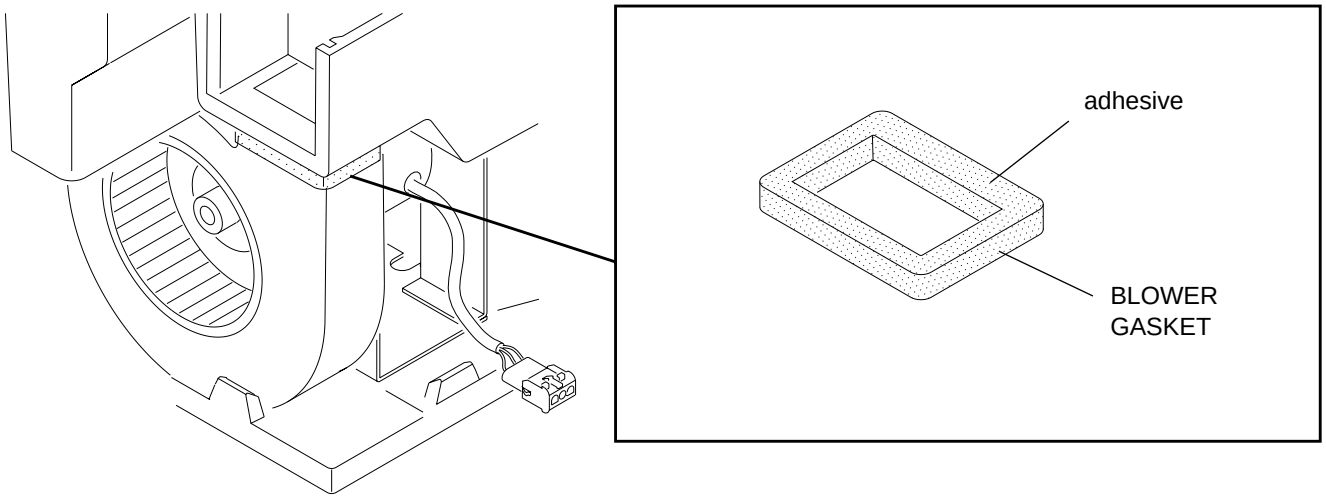
(h) Remove the backing of the adhesive on the BLOWER GASKET.

(i) Slide the BLOWER GASKET up so that it seals with the PROCESSOR TANK.

(j) To ensure maximum airflow, the BLOWER GASKET must fit correctly. Check that the DRYER BLOWER seals against the BLOWER GASKET correctly.

[5] If you removed or loosened the DRYER BLOWER BRACKET, check that you install the BRACKET so that it is seated tightly against the 3 LOCATING PINS in the BASE.

Figure 38 **Checking that the BLOWER GASKET Seals Correctly**



H130_0195BCA
H130_0195BA

Section 4: MAIN DRIVE

Removing the DRIVE MOTOR

Important

Only qualified service personnel should service the PROCESSOR.

Important

All the procedures in this section require that you de-energize the PROCESSOR and remove the TOP COVER before beginning the first step of the service procedure.

[1] Remove the DRIVE SIDE ACCESS PANEL and the BACK ACCESS PANEL by loosening the 2 SCREWS on each ACCESS PANEL.

[2] Remove:

- DRYER RACK
- EVAPORATION COVERS
- WASH RACK
- DEVELOPER RACK
- FIXER RACK

[3] If your PROCESSOR has a serial number of less than 350 or does not have Mod 1 installed, cut and remove the WIRE TIES on the DRIVE MOTOR BRACKET.

[4] Disconnect CONNECTOR P/J1.

Important

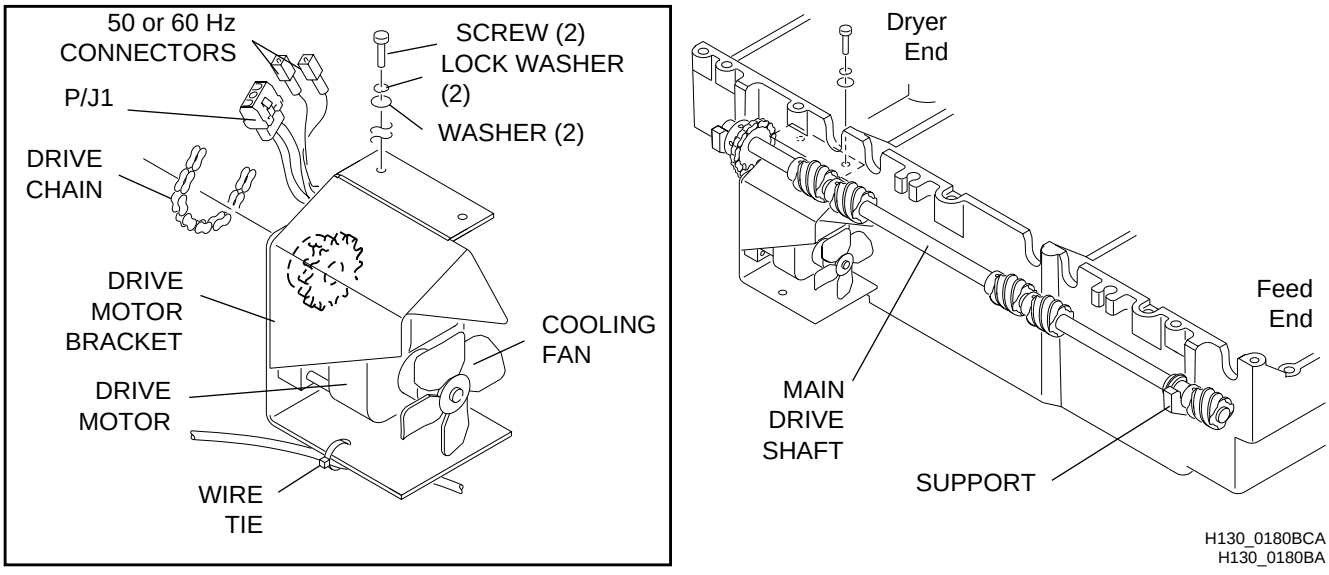
Be sure to support the DRIVE MOTOR with your free hand while removing the 2 SCREWS. Continue supporting the DRIVE MOTOR until you have removed it from the PROCESSOR completely.

[5] Remove the 2 SCREWS, 2 LOCK WASHERS, and 2 WASHERS securing the DRIVE MOTOR BRACKET to the WASH SUMP TANK.

[6] Remove the DRIVE MOTOR from the DRIVE CHAIN.

[7] Remove the COOLING FAN from the SHAFT.

Figure 39 **Removing the DRIVE MOTOR BRACKET**
Illustration Shows PROCESSORS With a Serial Number of 350 or less, or Without Mod 1 Installed



[8] Remove the DRIVE MOTOR from the MOTOR BRACKET by removing:

- 3 SCREWS
- 3 LOCK WASHERS
- 3 WASHERS

[9] If you need to install a new DRIVE MOTOR, remove the SETSCREW securing the DRIVE SPROCKET to the MOTOR SHAFT. Remove the DRIVE SPROCKET.

Caution

- Check that you route all wires away from the COOLING FAN.
- Only one of the 2 CONNECTORS can be used. The DRIVE MOTORS are shipped from the factory as follows:

  M43A and Clinic 1 — 60 Hz CONNECTOR available for use

  M43 — 50 Hz CONNECTOR available for use

[10] To replace the DRIVE MOTOR, check that the appropriate 50 or 60 Hz CONNECTOR is connected.

[11] Check that the COOLING FAN is installed onto the SHAFT with the BLADES of the FAN bent toward the MOTOR.

[12] Install a new DRIVE MOTOR by reversing Steps 3 through 9.

[13] Do the DRIVE MOTOR adjustment procedure on Page 60.

[14] Use WIRE TIES to attach the WIRE HARNESS to the DRIVE MOTOR BRACKET.

[15] Check that the WIRE HARNESS between the REPLENISHMENT PUMP and the ELECTRICAL BOX will not interfere with the movement of the ELECTRICAL BOX.

Removing the MAIN DRIVE SHAFT

[1] Before removing the MAIN DRIVE SHAFT, you need to remove the DRIVE MOTOR. Do Steps 1 through 6 on Page 46.

[2] Lift the MAIN DRIVE SHAFT from the SUPPORTS on the PROCESSOR frame. Do not allow the BEARING to slide off of the SHAFT.

[3] Lift the CHAIN off the SPROCKET on the MAIN DRIVE SHAFT. See Figure 39 on Page 46.

[4] Remove the BEARING from the **Drive** end of the MAIN DRIVE SHAFT.

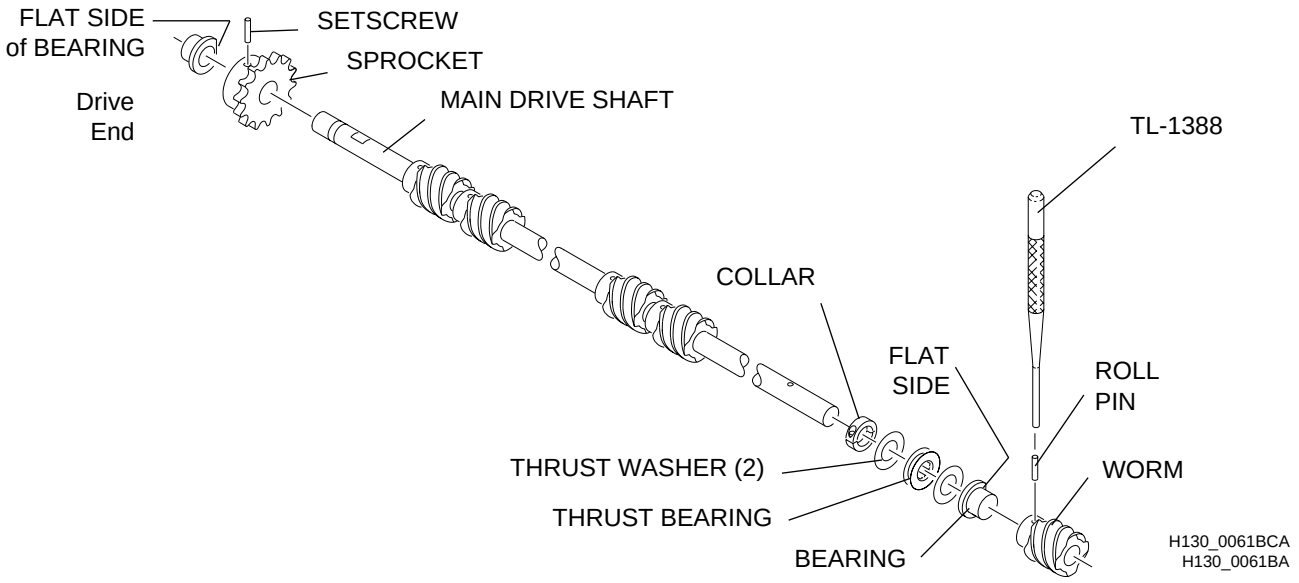
[5] Remove the SPROCKET by loosening the SETSCREW and sliding the SPROCKET off the MAIN DRIVE SHAFT.

[6] Using a ROLL PIN PUNCH TL-1388, remove the PIN securing the WORM, as needed. The WORMS are identical.

[7] Remove worn or broken parts from the MAIN DRIVE SHAFT, as needed.

[8] If you need to install an entire new MAIN DRIVE SHAFT, remove and inspect all the parts mounted to the existing SHAFT. Install the parts onto the new MAIN DRIVE SHAFT.

Figure 40 **Removing the WORMS and BEARINGS**



[9] Check the GAP at the **Non-Drive End** of the MAIN DRIVE SHAFT by doing the step below.

(a) Using a THICKNESS GAUGE, check that there is a 0.64 mm (0.025 in.) gap between the THRUST BEARING and the BEARING for the DRIVE SHAFT when the SHAFT is pushed toward the DRIVE MOTOR. See the figure.

Important

When installing the MAIN DRIVE SHAFT, check that the FLAT SIDE of the BEARING is installed toward the center of the PROCESSOR

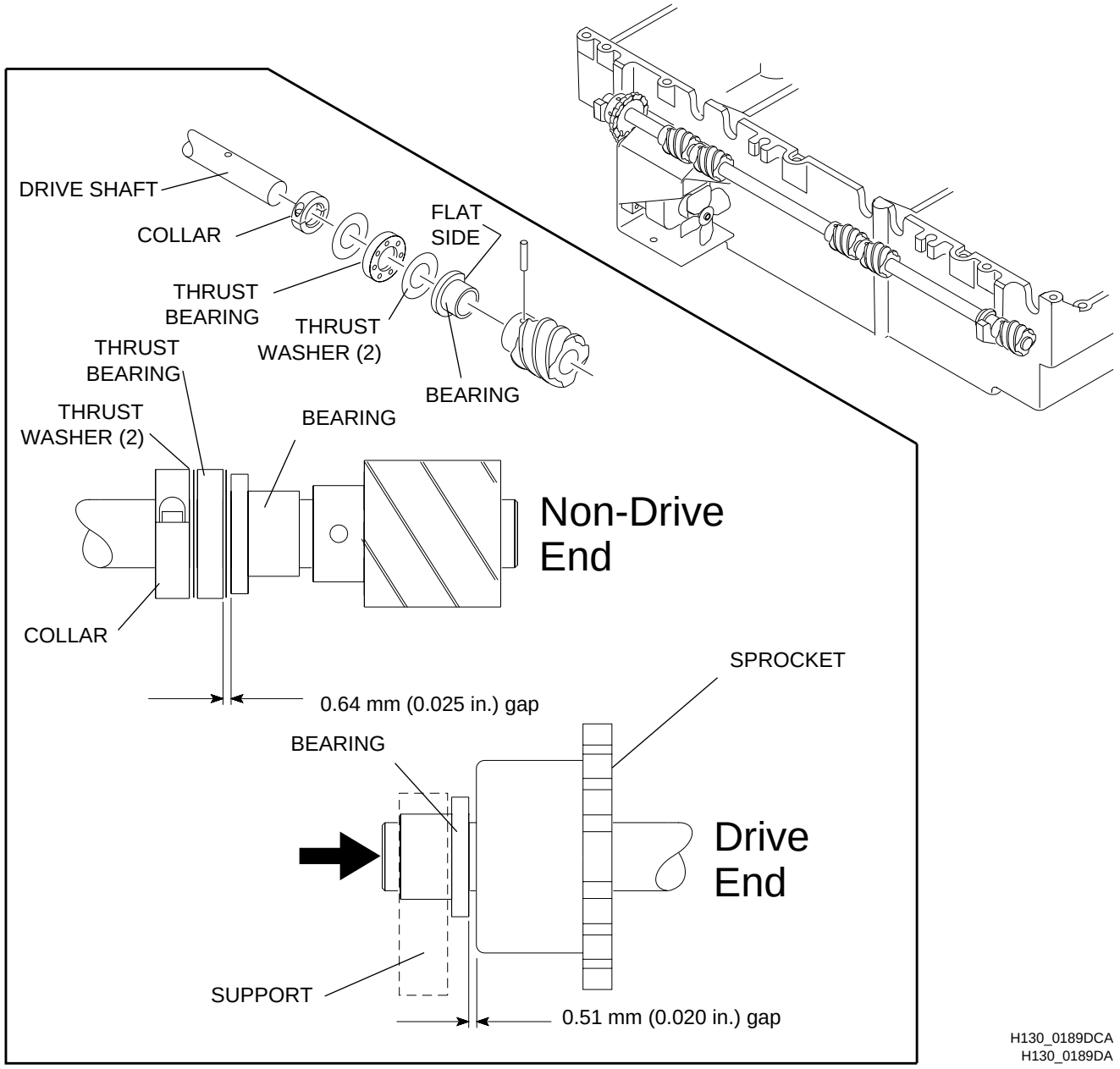
(b) Install the MAIN DRIVE SHAFT.

[10] Check the GAP at the **Drive End** of the MAIN DRIVE SHAFT by doing the step below.

(a) Using a THICKNESS GAUGE, check that there is a 0.51 mm (0.025 in.) gap between the BEARING and the SPROCKET when the SHAFT is pushed toward the DRIVE MOTOR. See the figure.

[11] Do the procedure for adjusting the MAIN DRIVE CHAIN on Page 50.

Figure 41 **Checking the Gaps**



Adjusting the MAIN DRIVE CHAIN and the DRIVE MOTOR

Warning

Moving parts

[1] Check that:

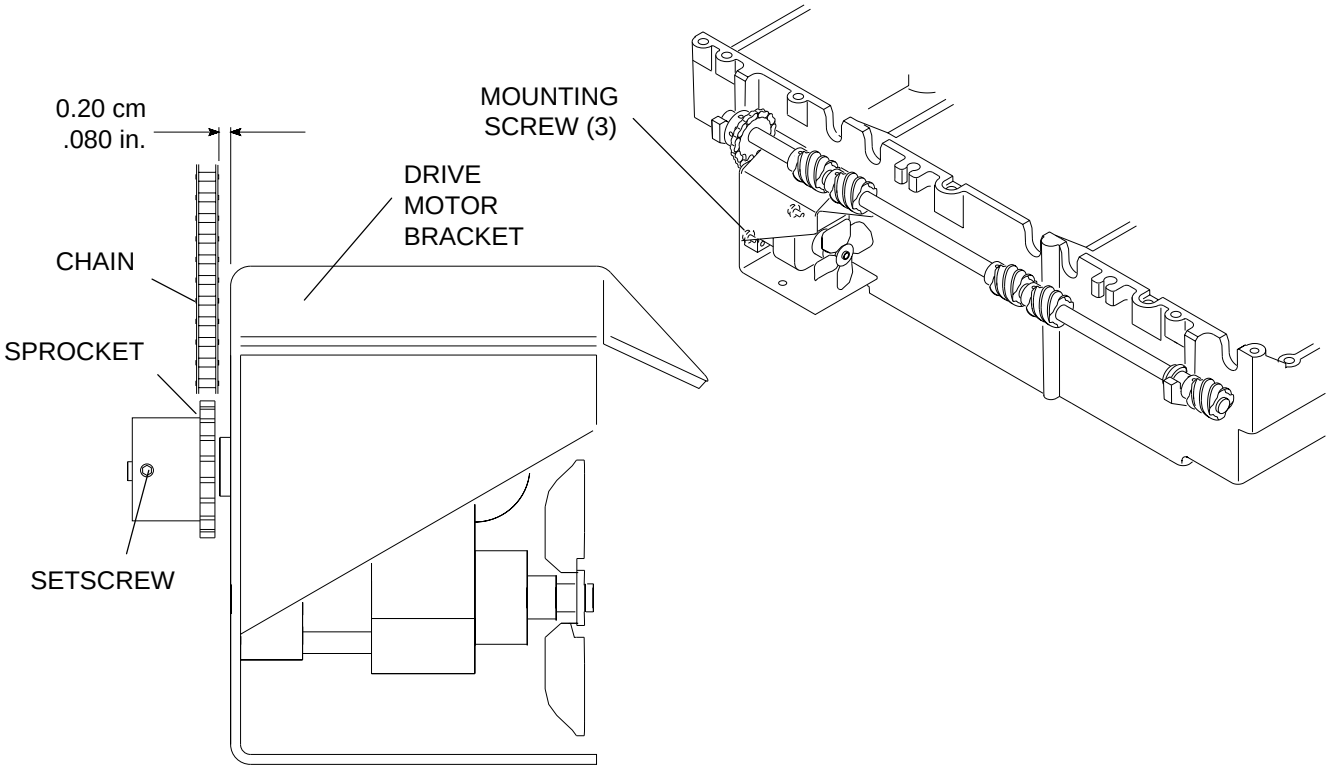
- PROCESSOR is de-energized
- main power is disconnected
- TOP COVER is removed

[2] Remove:

- DRIVE SIDE ACCESS PANEL
- BACK ACCESS PANEL

[3] Loosen the 3 MOUNTING SCREWS for the DRIVE MOTOR.

Figure 42 **Adjusting the MAIN DRIVE CHAIN**



H130_0188HCA
H130_0188HA

Caution

Do not overtighten the DRIVE CHAIN.

[4] Adjust the tension of the CHAIN by moving the MOTOR.

[5] Move the DRIVE MOTOR to adjust the DRIVE CHAIN for the correct tension, allowing a deflection of 3.2 mm (⅛ in.).

[6] Tighten the 3 MOUNTING SCREWS.

[7] Check for the correct horizontal position of the MAIN DRIVE CHAIN and 2 DRIVE MOTOR SPROCKETS. Allow 0.20 cm (0.08 in.) of clearance between the DRIVE MOTOR BRACKET and the CHAIN. See Figure 42 on Page 50.

(a) If necessary, loosen 1 SETSCREW on the DRIVE MOTOR SPROCKET to adjust the clearance.

[8] Install:

- BACK ACCESS PANEL
- DRIVE SIDE ACCESS PANEL
- TOP COVER

Section 5: Plumbing

Routing the TUBING and Positioning the SCREW CLAMPS

Warning

- DRAINS must be made of chemically resistant, non-corrosive material. Use CPVC or equivalent.
- The DRAIN must have a minimum diameter of 7.6 cm (3 in.) and be free of obstruction.
- DRAIN service must comply with local codes.

Important

Only qualified service personnel should service the PROCESSOR.

Important

All the procedures in this section require that you drain the processing tanks, de-energize the PROCESSOR, and remove the TOP COVER before beginning the first step of the service procedure.

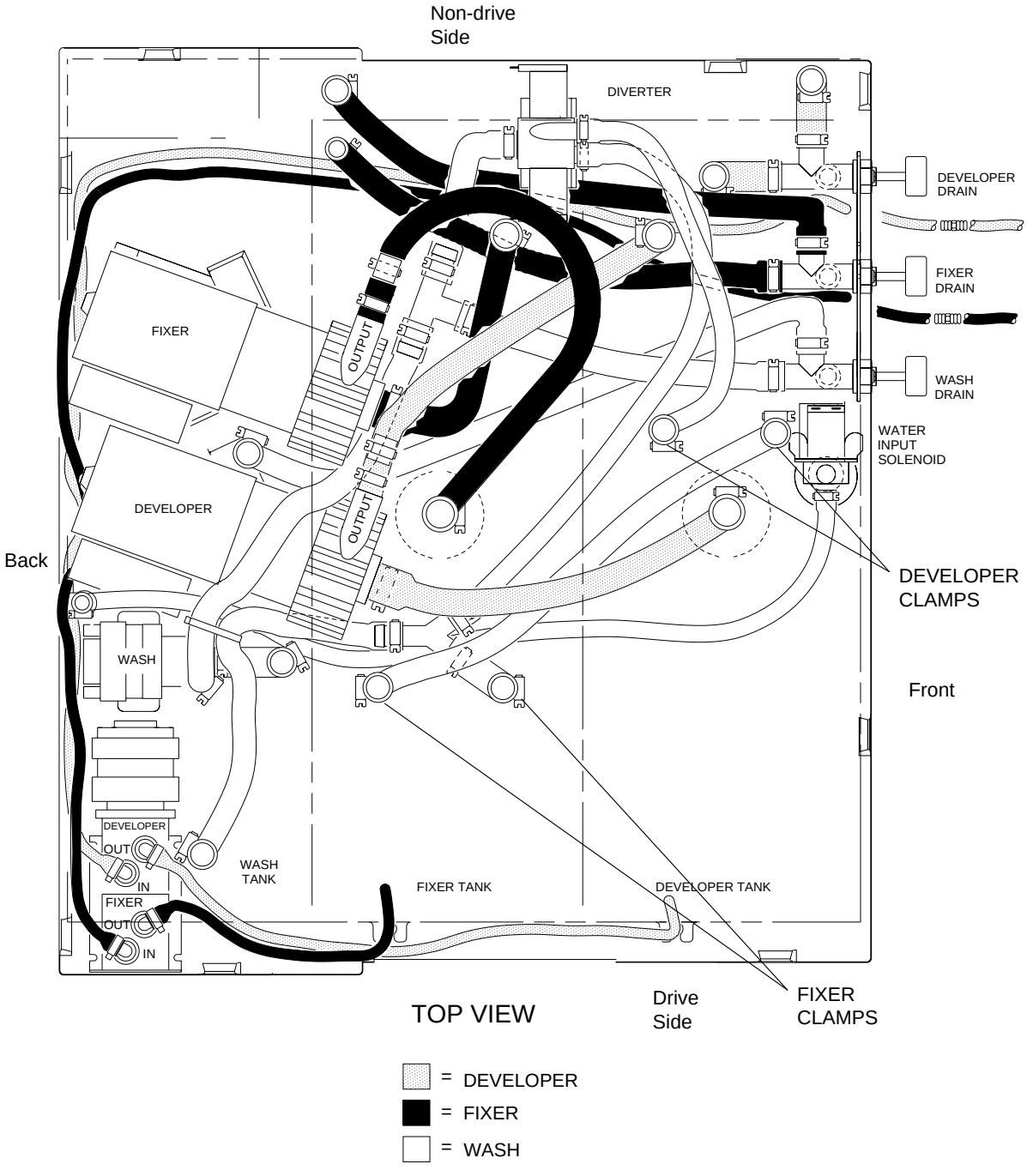
The correct routing of the TUBING is **critical** for the correct flow of processing solutions through the PROCESSOR. Incorrect routing of the TUBING can cause kinks, airlocks, and insufficient draining. See the following figures for the correct routing.

The correct orientation of the SCREW CLAMPS is essential in order to have access to the SCREWS securing the SCREW CLAMPS. See the following figures for the correct orientation.

Note

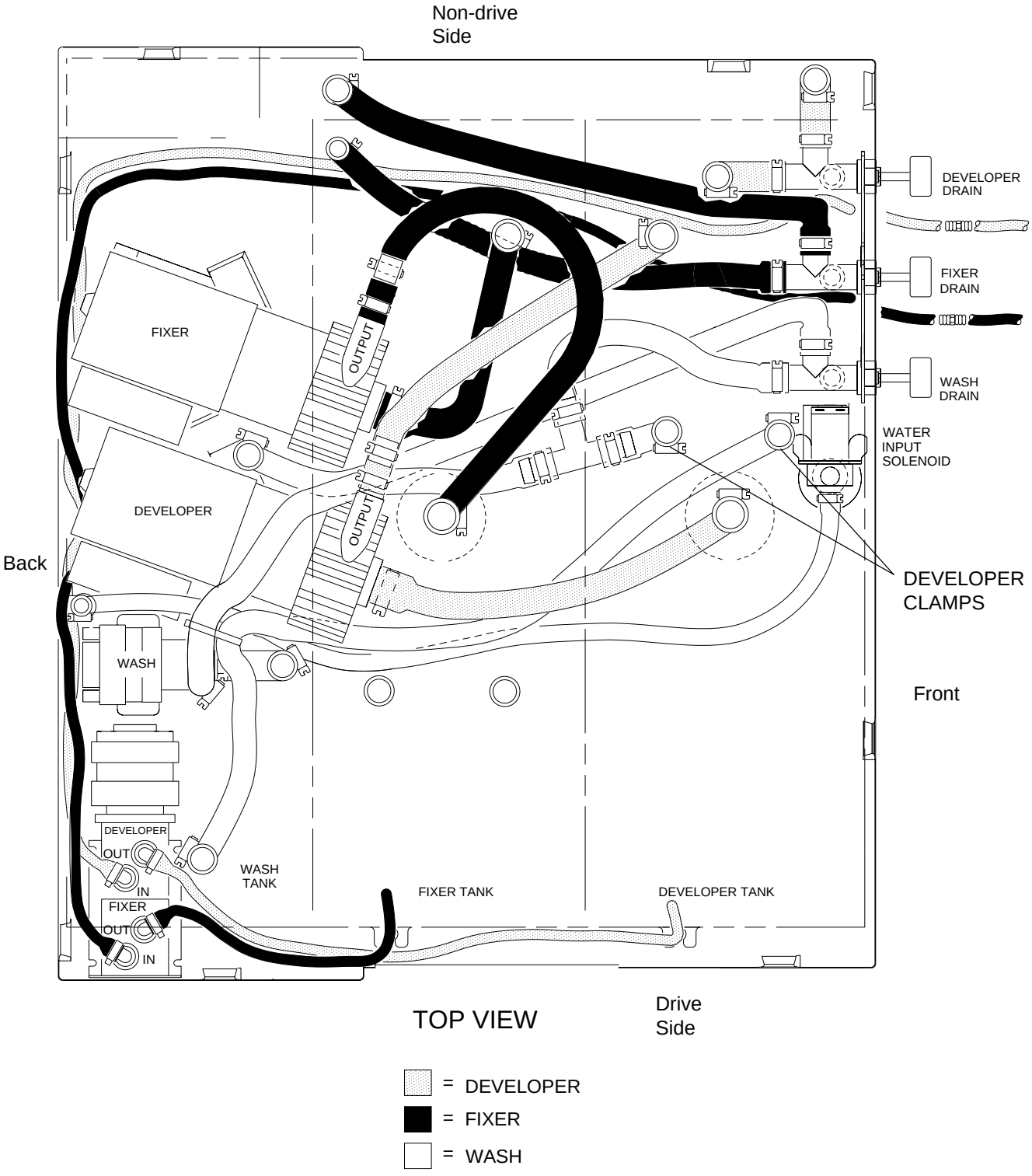
In order to reach the SCREWS securing the SCREW CLAMPS located under the PROCESSOR TANKS, use EXTENSION TOOL TL-4571.

Figure 43 **Positioning the TUBING and the SCREW CLAMPS for the M43 and M43A PROCESSORS**



H130_0125ECA
H130_0125EA

Figure 44 **Routing the TUBING and Positioning the SCREW CLAMPS for the Clinic 1 PROCESSOR**



H130_0137ECA
H130_0137EA

Removing the RECIRCULATION PUMPS and the REPLENISHMENT PUMP

Removing the DEVELOPER (B5) and FIXER (B6) RECIRCULATION PUMPS

[1] Check that:

- PROCESSOR is de-energized
- main power is disconnected
- TANKS are drained as necessary
- TOP COVER is removed

[2] Remove:

- DRYER RACK
- EVAPORATION COVER
- WASH RACK

[3] Remove the BACK ACCESS PANEL and both SIDE ACCESS PANELS by loosening the 2 SCREWS securing each of them to the PROCESSOR.

Note

See Figures 45 and 46 on Page 56 when doing this procedure.

[4] Check that you have completed all the steps on Page 56 before you begin this procedure.

[5] Either drain the processing solution from the PROCESSOR TANK whose PUMP you are removing, or install CLAMPS TL-2170 onto both HOSES connected to the PUMP you are removing in order to stop the flow of processing solution.

[6] To gain access to the DEVELOPER RECIRCULATION PUMP, slide out the ELECTRICAL BOX from the **Drive** side of the PROCESSOR.

[7] Disconnect the PUMP you are removing.

- CONNECTOR P/J2 for the DEVELOPER RECIRCULATION PUMP
- CONNECTOR P/J3 for the FIXER RECIRCULATION PUMP

Note

The DEVELOPER RECIRCULATION PUMP is the PUMP located closest to the **Drive** side of the PROCESSOR. The FIXER RECIRCULATION PUMP is the PUMP located closest to the **Non-Drive** side of the PROCESSOR. See the figures on Page 56 for the location of the RECIRCULATION PUMPS.

[8] Use EXTENSION TOOL TL-4571 to loosen the 2 SCREW CLAMPS. See Figures 43, 44, 45, and 46 for the easiest access to the SCREW CLAMPS.

[9] Disconnect the HOSES.

[10] Loosen the SCREW, LOCK WASHER, and WASHER securing the RECIRCULATION PUMP to the frame of the PROCESSOR.

[11] Install the RECIRCULATION PUMP by reversing the steps above.

[12] Remove the CLAMPS if they were installed in Step 5.

[13] If you drained the PROCESSOR TANK in Step 5, fill the TANK with water until the water level is 7.6 cm (3 in.) deep.

(a) Check that the HOSES connected to the RECIRCULATION PUMP fill with water.

(b) Check all HOSE connections for leaks.

[14] Check that the TANKS are full of solution.

[15] Energize the RECIRCULATION PUMP by inserting INTERLOCK TOOL TL-4740 into the AC INTERLOCK SWITCH S5, located near the DRYER ASSEMBLY on the drive side of the PROCESSOR.

[16] Place a MAGNET on the DC INTERLOCK SWITCH S6 on the DRYER PLENUM BRACKET.

Note

The DC INTERLOCK SWITCH S6 is only found in PROCESSORS that either have a serial number of 350 or higher, or have Mod 1 installed.

[17] Connect the main power and energize the PROCESSOR.

[18] Check all HOSE connections for leaks.

[19] If the RECIRCULATION PUMP operates correctly and the PROCESSOR TANK is full of water, drain the water from the TANK and fill the TANK with processing solution.

Figure 45 **Removing the FIXER RECIRCULATION PUMP**

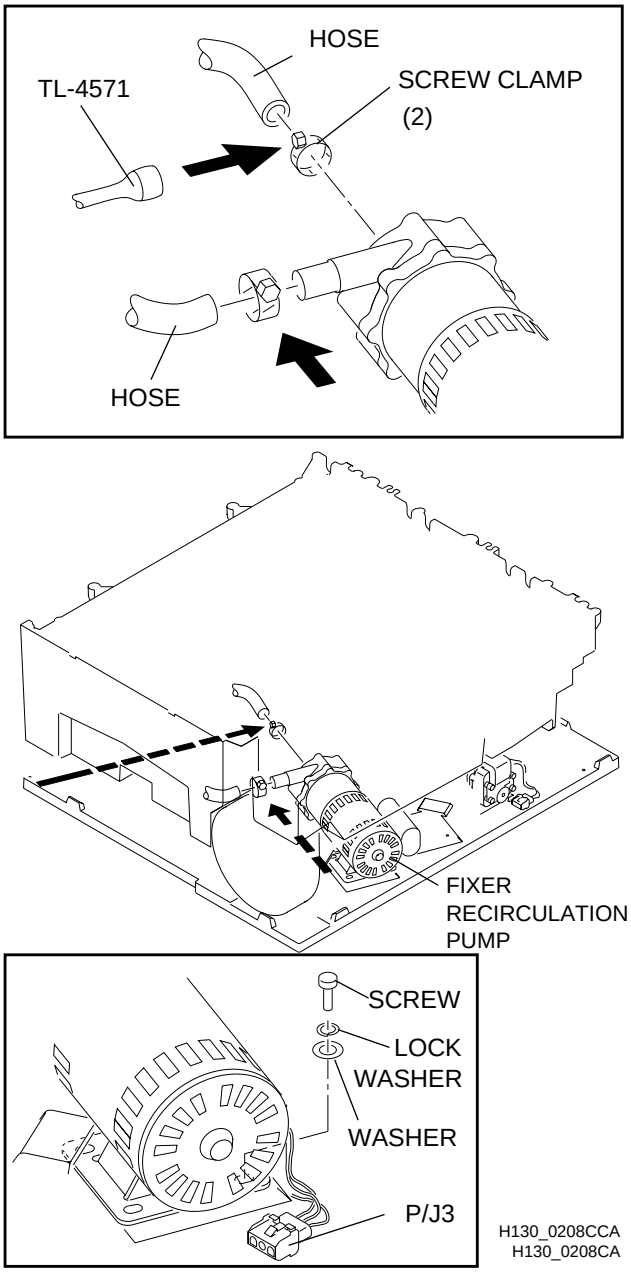
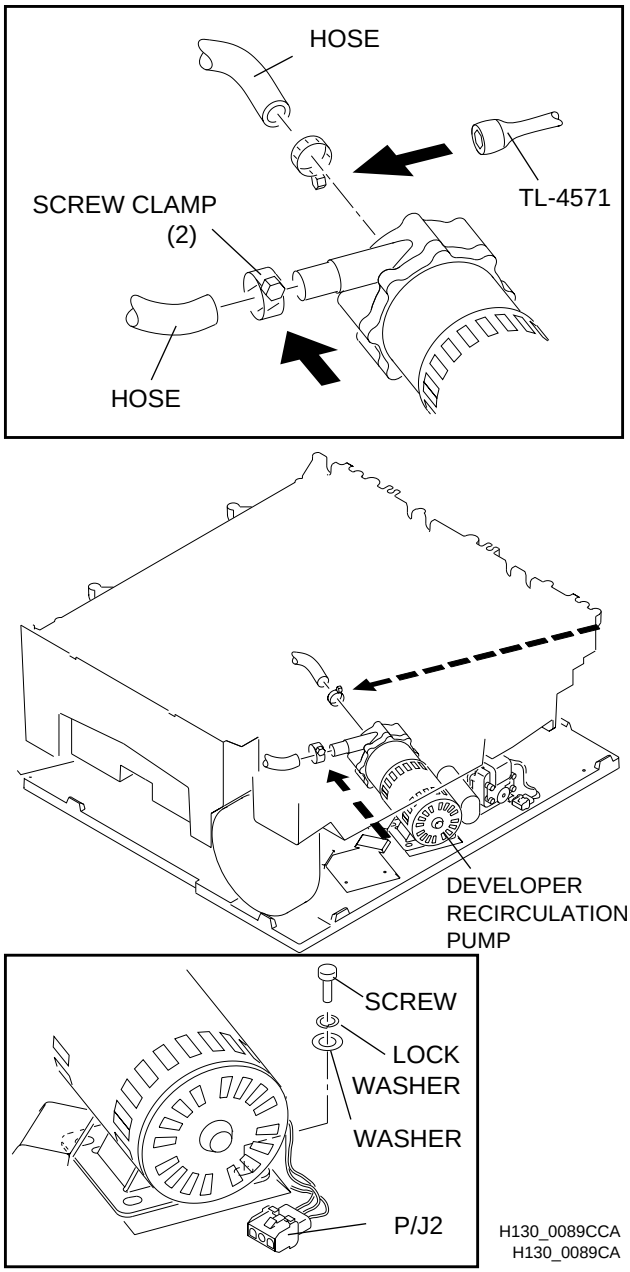
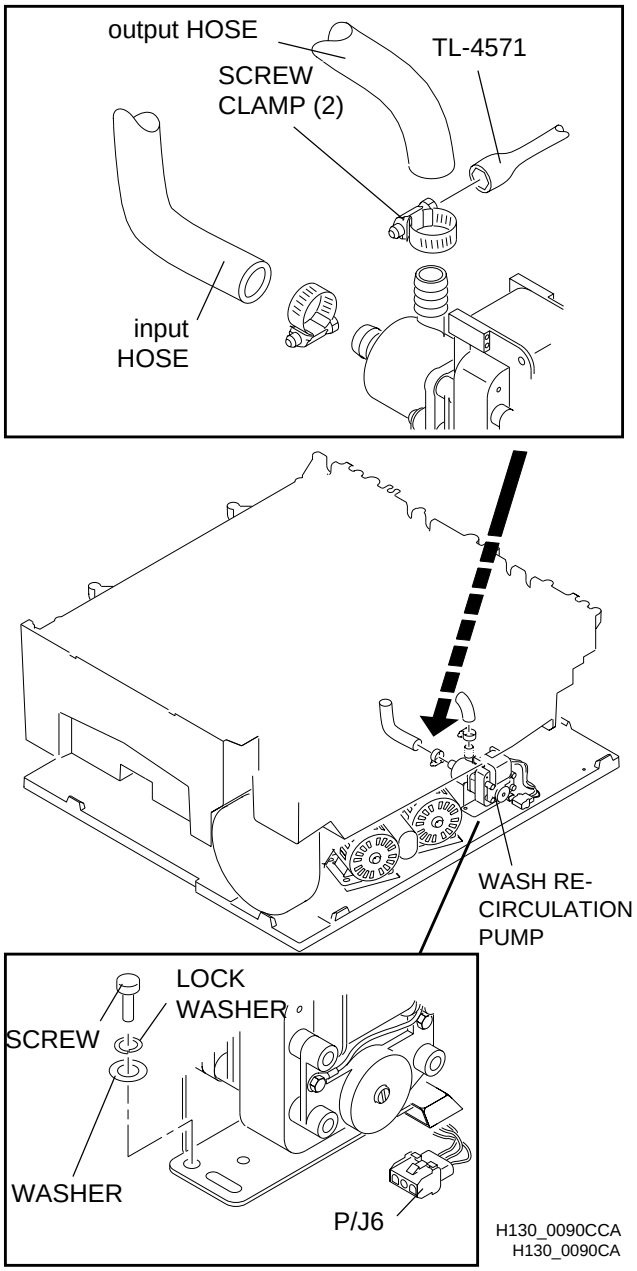


Figure 46 **Removing the DEVELOPER RECIRCULATION PUMP**



Removing the WASH RECIRCULATION PUMP (B2)

Figure 47 **Removing the WASH RECIRCULATION PUMP**



[1] Check that you have completed all the steps on Page 55 before you begin this procedure.

[2] Check that the WASH TANK is drained.

[3] To gain access to the WASH RECIRCULATION PUMP, slide out the ELECTRICAL BOX from the **Drive** side of the PROCESSOR.

[4] Disconnect CONNECTOR P/J6.

Important

Some solution may leak. Be ready to wipe up any spilled solution.

[5] Use EXTENSION TOOL TL-4571 to loosen the 2 SCREW CLAMPS and disconnect the HOSES from the WASH RECIRCULATION PUMP.

[6] Loosen the SCREW, LOCK WASHER, and WASHER securing the WASH RECIRCULATION PUMP to the frame of the PROCESSOR.

[7] Install the WASH RECIRCULATION PUMP by reversing the steps above.

[8] Check that you route the HOSE connected to the WASH RACK so that it does not interfere with accessing the ELECTRICAL BOX.

[9] Check that the water supply is turned on.

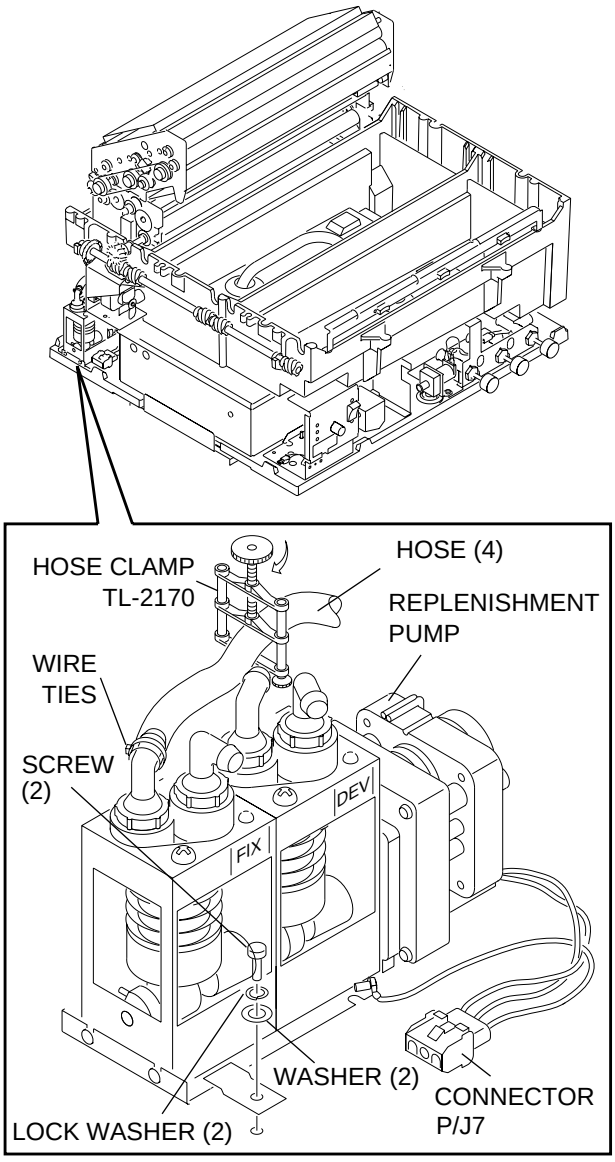
[10] Connect the main power and energize the PROCESSOR.

[11] See the Diagnostics Manual, Publication Number 981093, and do the Service Routines below:

- WATER INPUT SOLENOID - operate the SOLENOID to fill the WASH TANK
- WASH PUMP - operate the WASH PUMP and check that water is pumped through the WASH TUBES in the WASH RACK

Removing the DEVELOPER/FIXER REPLENISHMENT PUMP (B3)

Figure 48 **Removing the REPLENISHMENT PUMP**



H130_0028CCA
H130_0028CA

[1] Disconnect CONNECTOR P/J7.

[2] Remove the following parts from the front and back of the REPLENISHMENT PUMP base:

- 2 SCREWS
- 2 LOCK WASHERS
- 2 WASHERS

[3] Install 4 CLAMPS TL-2170 on the 4 HOSES attached to the REPLENISHMENT PUMP to prevent the leakage of developer and fixer solutions when you remove the HOSES from the REPLENISHMENT PUMP.

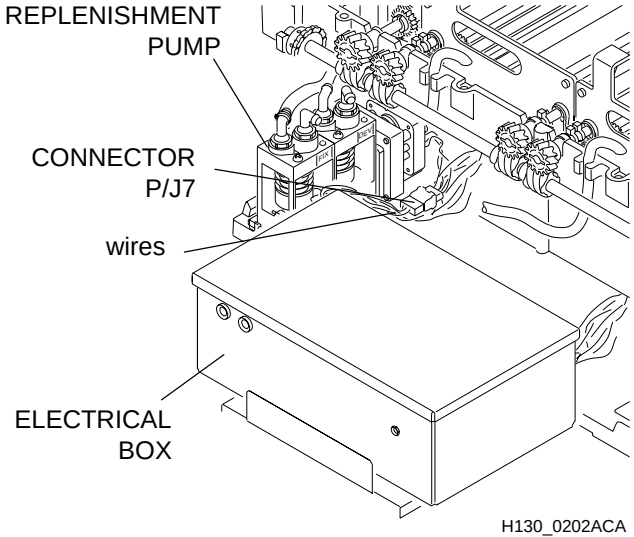
[4] Identify the REPLENISHMENT HOSES.

- The **developer** REPLENISHMENT HOSE can be identified by a **red** WIRE TIE.
- The **fixer** REPLENISHMENT HOSE can be identified by a **blue** WIRE TIE.

[5] Cut and leave in position the WIRE TIES securing the 4 HOSES to the REPLENISHMENT PUMP.

[6] Remove the HOSES from the REPLENISHMENT PUMP.

Figure 49 **Routing the Wires from the REPLENISHMENT PUMP**



[7] Route the wires so that they are out of the way of the ELECTRICAL BOX. See the figure.

[8] Install the REPLENISHMENT PUMP by reversing the steps above.

Caution

To avoid contamination of the processing solutions, do **not** interchange the developer and the fixer REPLENISHMENT HOSES.

[9] Check that the REPLENISHMENT HOSES are correctly attached to the REPLENISHMENT PUMP.

[10] Remove the old WIRE TIES and install **red** WIRE TIES onto the **developer** REPLENISHMENT HOSES and **blue** WIRE TIES onto the **fixer** REPLENISHMENT HOSES to help you quickly identify the REPLENISHMENT HOSES.

[11] Remove the CLAMPS.

[12] Connect the main power and energize the PROCESSOR.

[13] Check all the HOSE connections for leaks.

[14] Pull up the REPLENISHMENT CHECK TUBES and position them so that they empty into the appropriate the PROCESSING TANKS.

(a) Check that developer solution exits from the developer REPLENISHMENT CHECK TUBE, and that fixer solution exits from the fixer REPLENISHMENT CHECK TUBE.

Adjusting the Fixer To Developer Replenishment Rate Ratio

[1] Check the replenishment rates following the procedure in either the Operator Manual, Publication Number 981089, or the Installation Instructions, Publication Number 981088.

[2] Compare the replenishment rates you obtained to the recommended replenishment rates listed in the Replenishment Rate Information Sheet, Publication Number 1C5784, located in the front pocket of the publications binder. If your replenishment rates do not match the recommended rates, adjust the replenishment rates.

[3] Check that the PROCESSOR is de-energized.

[4] Remove:

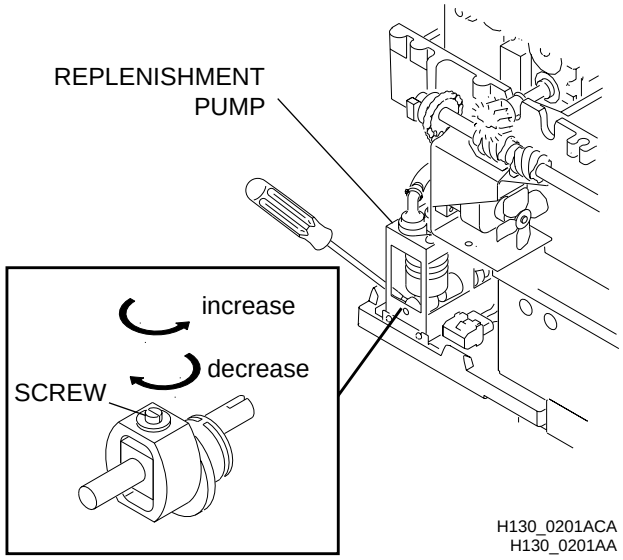
- TOP COVER
- DRYER RACK
- WASH RACK
- EVAPORATION COVER
- BACK ACCESS PANEL

Note

The FIXER PUMP is preset for its maximum stroke. Do not adjust the FIXER PUMP. Adjust the DEVELOPER PUMP CAM until you obtain the replenishment ratio recommended in Publication Number 1C0578.

[5] Rotate the PUMP SHAFT to access the ADJUSTMENT SCREW for the developer.

Figure 50 **Adjusting the Developer and Fixer Replenishment Rate Ratio**



[6] Rotate the ADJUSTMENT SCREW as necessary.

- counterclockwise increases the ratio
- clockwise decreases the ratio

[7] Connect the main power and energize the PROCESSOR.

[8] Insert a sheet of film under the MIDDLE FILM SENSOR to actuate the REPLENISHMENT PUMP until all air is removed from the REPLENISHMENT HOSES.

[9] Check the new replenishment rates using the procedure in either the Operator Manual, Publication Number 981089, or the Installation Instructions, Publication Number 981088.

[10] If the replenishment rates are **not** close to those listed in Publication Number 1C0578, de-energize the PROCESSOR and do Steps 6 through 9.

[11] Once the replenishment rates are correct:

(a) install all ACCESS PANELS

(b) install the TOP COVER

(c) check for correct replenishment by processing a sheet of test film

Removing the DEVELOPER HEATER (R1)

[1] Check that:

- PROCESSOR is de-energized
- main power is disconnected
- TOP COVER is removed

[2] Check that the DEVELOPER TANK is drained of solution.

[3] Remove the NON-DRIVE SIDE ACCESS PANEL by loosening the 2 SCREWS.

[4] Remove:

- DEVELOPER RACK
- DRYER RACK
- WASH RACK
- EVAPORATION COVER

[5] Remove the BACK ACCESS PANEL in order to gain access to CONNECTOR P/J8.

[6] Disconnect CONNECTOR P/J8.

[7] Remove the 3 SCREWS securing the DEVELOPER HEATER to the inside of the DEVELOPER SUMP TANK.

[8] Remove and discard the O-RING SEAL.

[9] Install a new O-RING SEAL.

[10] Install the DEVELOPER HEATER by reversing Steps 3 through 7 above.

Important

To prevent overtightening the 3 SCREWS and to prevent stripping the SCREW holes in the TANKS, follow the recommendations below.

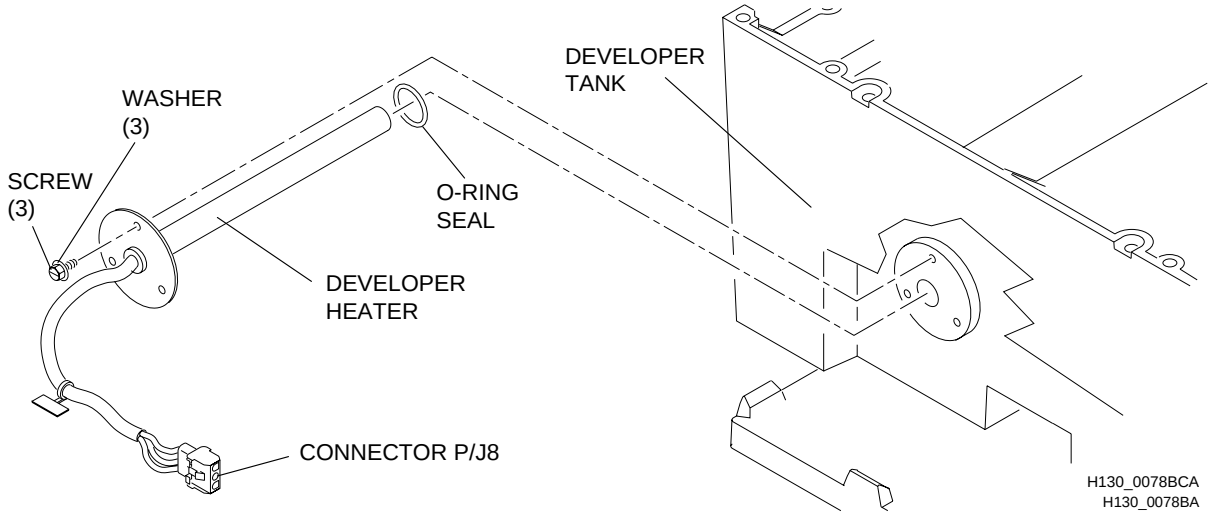
- Do **not** use power tools.
- First, partially tighten each of the 3 SCREWS.
- Then, tighten each of the 3 SCREWS securely.

[11] Fill the DEVELOPER TANK with water.

[12] Check for water leaks.

[13] Use the Service Routine to check for the correct operation of the DEVELOPER HEATER. See the Diagnostics Manual, Publication Number 981093.

Figure 51 **Removing the DEVELOPER HEATER**



Removing the DEVELOPER THERMISTOR (RT1)

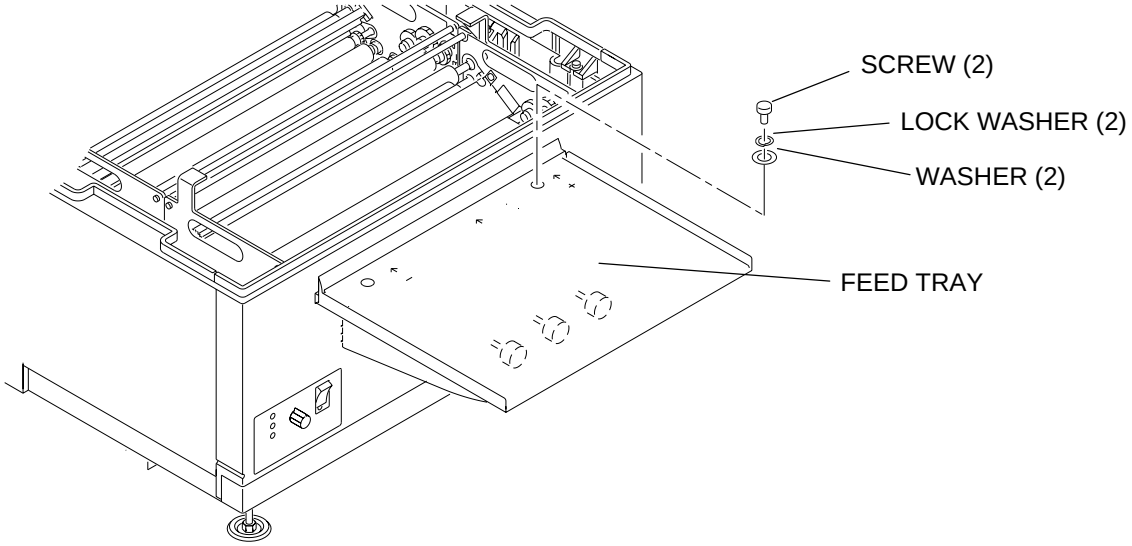
[1] Check that:

- PROCESSOR is de-energized
- main power is disconnected
- DEVELOPER TANK is drained
- TOP COVER is removed

[2] Remove the FEED TRAY by removing:

- 2 SCREWS
- 2 LOCK WASHERS
- 2 WASHERS

Figure 52 **Removing the FEED TRAY**



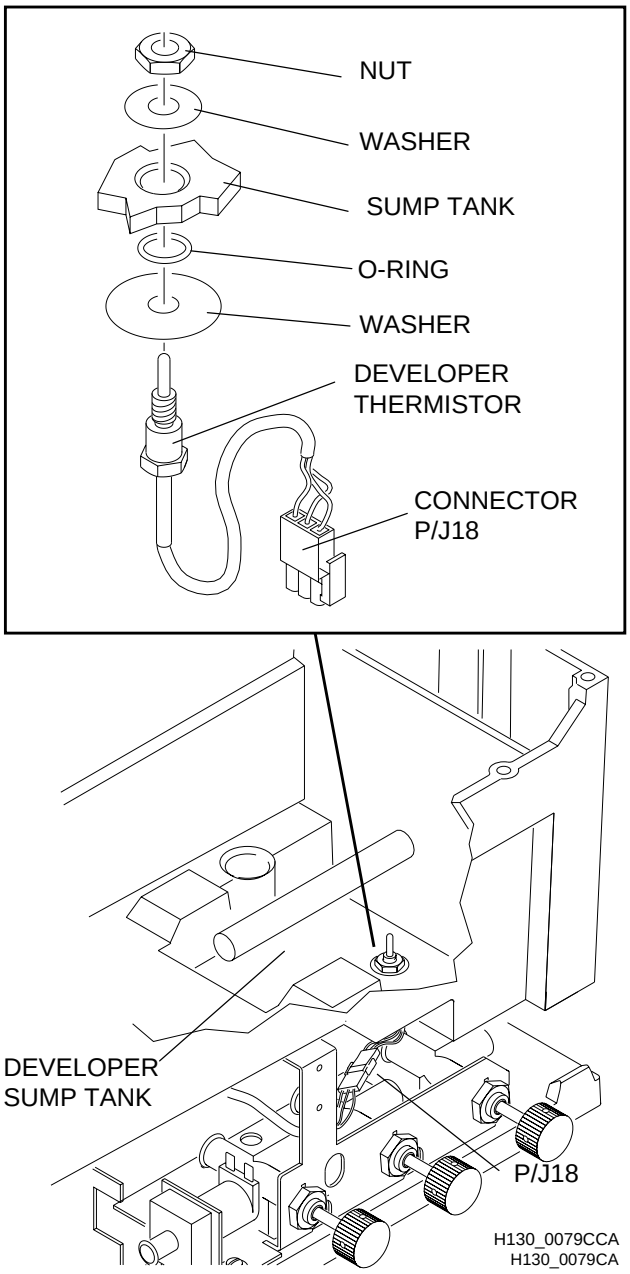
H130_0084BCA
H130_0084BA

[3] Remove the DRAIN VALVE KNOBS by removing the SETSCREWS securing them.

[4] Remove the DRYER TEMPERATURE CONTROL KNOB.

[5] Remove the FRONT ACCESS PANEL by loosening the 2 SCREWS.

Figure 53 **Removing the DEVELOPER THERMISTOR**



[6] Remove the DEVELOPER RACK. To prevent contamination of the processing solutions, use the DRIP TRAY.

[7] Disconnect CONNECTOR P/J18.

[8] Remove the NUT and WASHER securing the DEVELOPER THERMISTOR to the DEVELOPER SUMP TANK.

[9] Pull the DEVELOPER THERMISTOR through the bottom of the DEVELOPER SUMP TANK.

[10] Remove the O-RING and the WASHER from the DEVELOPER THERMISTOR.

[11] Inspect the O-RING for signs of wear or damage. If necessary use a new O-RING.

[12] Install the WASHER and O-RING onto the DEVELOPER THERMISTOR.

[13] Carefully, position the new DEVELOPER THERMISTOR, with O-RING and WASHER, through the hole in the bottom of the DEVELOPER SUMP TANK.

[14] Secure the DEVELOPER THERMISTOR to the DEVELOPER SUMP TANK by installing the WASHER and NUT removed in Step 8.

[15] Connect CONNECTOR P/J18.

[16] Fill the DEVELOPER TANK with water.

[17] Check that the FIXER TANK is full of solution before doing the next step.

[18] Insert the INTERLOCK TOOL TL-4740 into the AC SAFETY INTERLOCK SWITCH S5, located near the DRYER ASSEMBLY on the drive side of the PROCESSOR.

[19] Place a MAGNET on the DC INTERLOCK SWITCH S6 on the DRYER PLENUM BRACKET.

[20] Check that the developer temperature is 33.9°C (93.0°F) or at the expected setpoint temperature. If necessary, adjust the developer temperature by doing the procedure “Setting the Developer Temperature” on Page 86.

[21] Connect the main power and energize the PROCESSOR.

[22] Check all connections for leaks.

[23] De-energize the PROCESSOR.

[24] Install the DEVELOPER RACK.

[25] Drain the water from the DEVELOPER TANK and fill it with developer solution.

[26] Check all connections for leaks.

[27] Install the FRONT ACCESS PANEL.

[28] Check that all 3 DRAIN VALVES are closed.

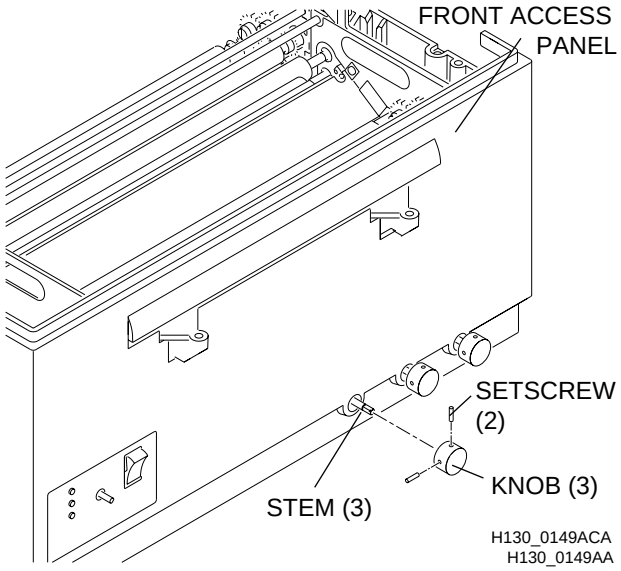
[29] Install the 3 DRAIN VALVE KNOBS.

(a) Check that you align the SETSCREW of the KNOB with the flat section of the STEM.

(b) Leave a 3 mm (⅛ in.) gap between the FRONT ACCESS PANEL and the back of the KNOBS.

(c) Secure the KNOBS using the 2 SETSCREWS provided for each.

Figure 54 **Installing the KNOBS for the DRAIN VALVES**



[30] Install the DRYER TEMPERATURE CONTROL KNOB.

[31] Install the FEED TRAY using the 2 SCREWS, 2 LOCK WASHERS, and 2 WASHERS.

Removing the DRAIN VALVES

Disassembling and Inspecting the DRAIN VALVES

Important

This procedure applies to PROCESSORS with the following serial numbers and below:

- M43: 550
- M43A: 500
- Clinic 1: 600

Note

See Figure 56 on Page 67 when doing this procedure.

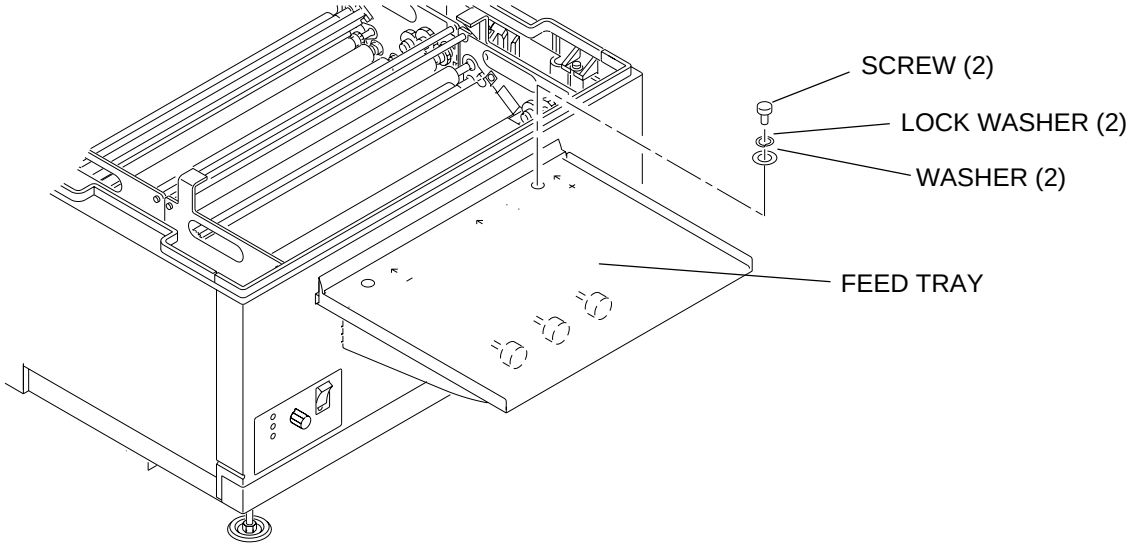
[1] Check that:

- PROCESSOR is de-energized
- main power is disconnected
- TOP COVER is removed
- TANKS are drained, as needed

[2] Remove the FEED TRAY by removing:

- 2 SCREWS
- 2 WASHERS
- 2 LOCK WASHERS

Figure 55 **Removing the FEED TRAY**



H130_0084BCA
H130_0084BA

[3] Remove the DRAIN VALVE KNOBS by removing the 2 SETSCREWS securing them.

[4] Remove the DRYER TEMPERATURE CONTROL KNOB.

[5] Remove the FRONT ACCESS PANEL by loosening the 2 SCREWS.

[6] Install CLAMPS TL-2170 onto the DRAIN HOSE and OVERFLOW HOSES connected to the DRAIN VALVE that you are repairing.

[7] Loosen the CAP on the STEM ASSEMBLY.

Note

Some water may leak. Be ready to wipe up any spilled water.

[8] Remove the STEM ASSEMBLY.

[9] Inspect the STEM ASSEMBLY to determine if it is the cause of the leak. If not, continue with the steps below to remove the DRAIN VALVE.

Note

If the developer or fixer solution levels are decreasing, but the bottom tray of the PROCESSOR has no solution, check that WASH STEM ASSEMBLY 8B6927 is not installed. If necessary, continue with the steps below to remove the DRAIN VALVE.

Replacing the DRAIN VALVES

[1] Loosen the SCREW on the CLAMP securing the DRAIN TUBING to the DRAIN VALVE. Position the CLAMP so that is out of the way.

[2] Disconnect the DRAIN TUBING and the OVERFLOW HOSE from the DRAIN VALVE that you are removing.

[3] Disconnect the MAIN DRAIN HOSE from the DRAIN VALVE that you are removing.

[4] Remove the DRAIN VALVE from the BRACKET.

[5] Reverse the steps above to install a new DRAIN VALVE.

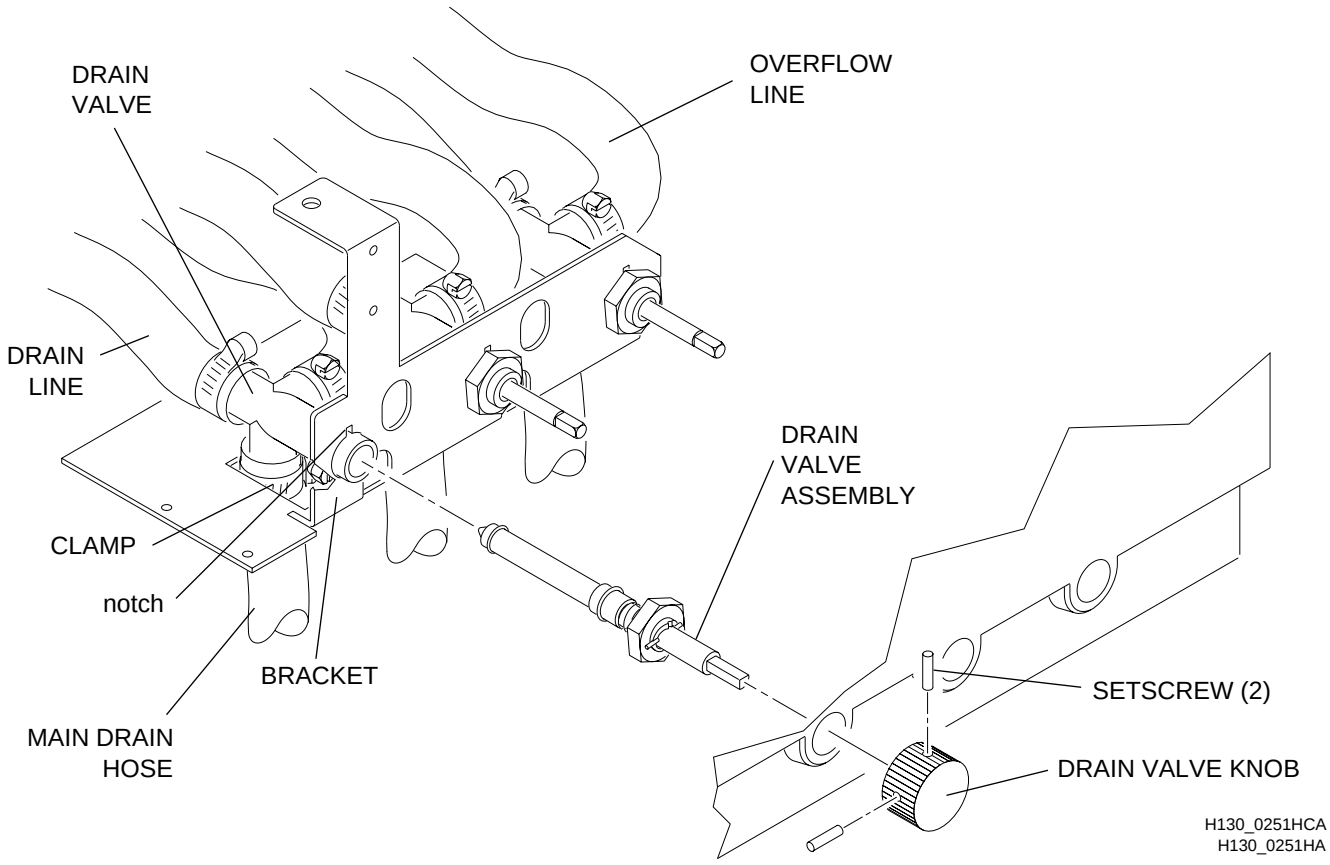
Important

a. When installing a new DRAIN VALVE, be sure that you align the POST on the DRAIN VALVE with the notch in the BRACKET.

b. When installing the DRAIN VALVE KNOB, be sure that you do the following:
   1. Check that all 3 DRAIN VALVES are closed.
   2. Align the SETSCREW of the KNOB with the flat section of the STEM.
   3. Leave a 3 mm (⅛ in.) gap between the FRONT ACCESS PANEL and the back of the KNOBS.

c. Check the following:
   1. in Continuous Water Usage Mode, the VALVE STEM has a white dot on the end and an orifice
   2. in Low Water Usage Mode, the VALVE STEM does not have a white dot on the end and has no orifice

Figure 56 **Removing the DRAIN VALVES**



Removing the WATER INPUT SOLENOID VALVE (L1)

[1] Check that:

- PROCESSOR is de-energized
- main power is disconnected
- TOP COVER is removed
- main water supply is turned off

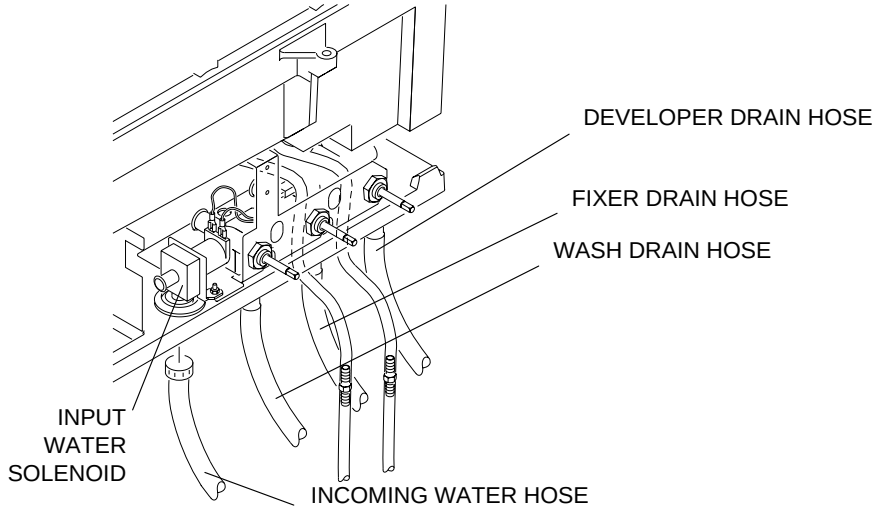
Note

Some water may leak. Be ready to wipe up any spilled water.

[2] To minimize the water that may leak, loosen the connection for the INCOMING WATER HOSE at the wall.

[3] Disconnect the water supply to the WATER INPUT SOLENOID.

Figure 57 **Disconnecting the Water Supply to the WATER INPUT SOLENOID**



[4] Remove the HOSE and the CLAMP from the end of the WATER INPUT SOLENOID. To prevent losing the CLAMP, place the CLAMP on the HOSE

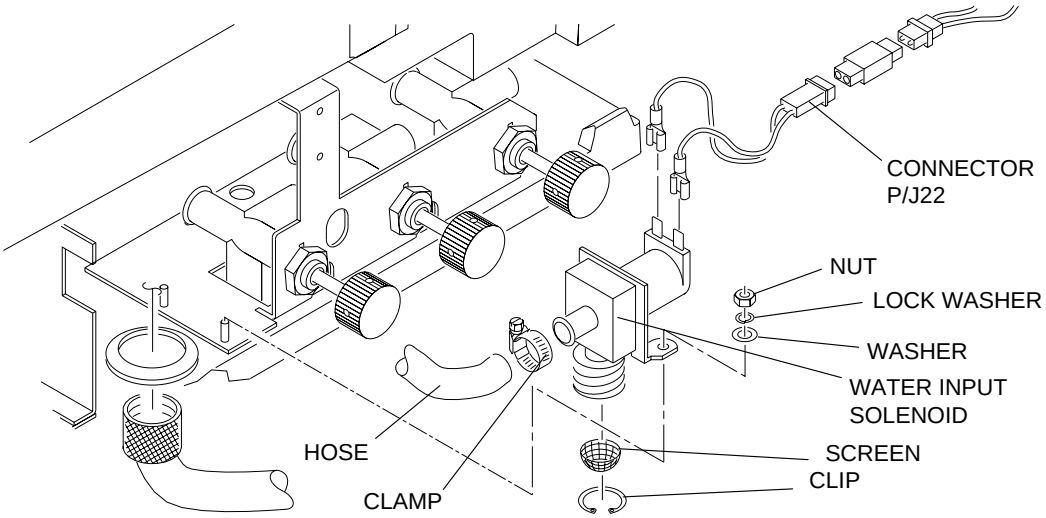
[5] Disconnect the wires from the WATER INPUT SOLENOID.

[6] Remove the WATER INPUT SOLENOID by removing the NUT, WASHER, and LOCK WASHER that secure the SOLENOID to the PROCESSOR.

[7] Remove and inspect the FILTER SCREEN inside the inlet of the WATER INPUT SOLENOID. If necessary, clean the FILTER SCREEN.

[8] Install the WATER INPUT SOLENOID by reversing the steps above.

Figure 58 **Removing the WATER INPUT SOLENOID**



Removing the DIVERTER VALVE (L2) and (L3) in the M43 and M43A PROCESSORS

Note

See Figure 59 on Page 71 when doing this procedure.

[1] Check that:

- PROCESSOR is de-energized
- main power is disconnected
- TOP COVER is removed
- WASH TANK is drained
- main water supply is turned off

[2] Remove the NON-DRIVE SIDE ACCESS PANEL by loosening the 2 SCREWS.

[3] Install CLAMPS TL-2170 onto the 3 HOSES to stop the flow of water.

Note

Some water may leak. Be ready to wipe up any spilled water.

[4] Identify the output HOSES (Normal Operation and Cooling Mode).

[5] Remove the 3 CLAMPS securing the 3 HOSES to the VALVE and remove the HOSES.

[6] Remove the SCREW securing the DIVERTER VALVE to the PROCESSOR frame.

[7] Disconnect the 4 WIRE PLUGS from the DIVERTER VALVE.

[8] Record the position of the wires.

[9] Remove the DIVERTER VALVE from the PROCESSOR.

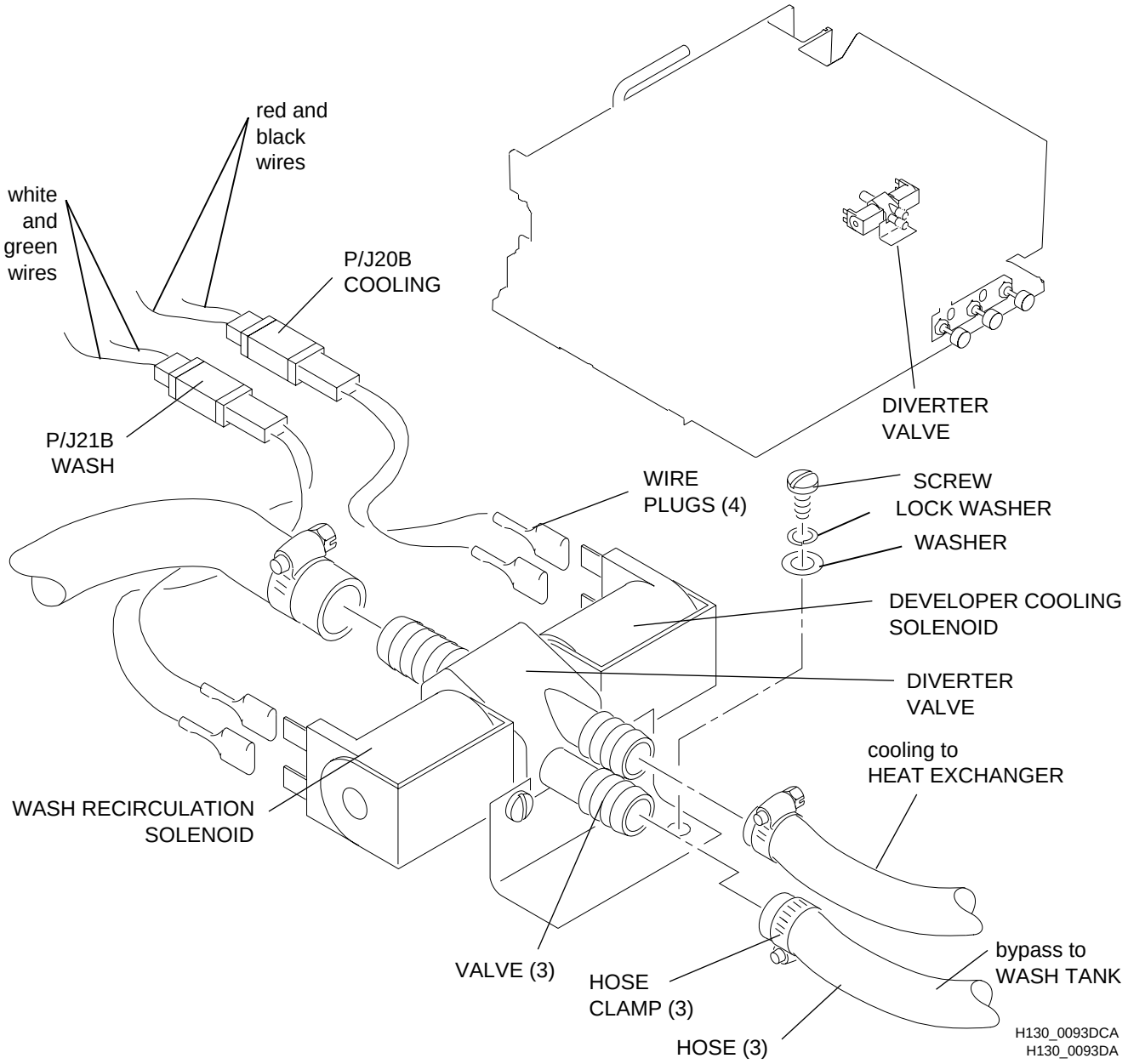
[10] Install the DIVERTER VALVE by reversing the steps above.

[11] Check that the following parts were installed correctly:

- 4 WIRE PLUGS
- 2 output HOSES
- 1 input HOSE

[12] Use the Service Routine to check for the correct operation of the DIVERTER VALVE. See the Diagnostics Manual, Publication Number 981093.

Figure 59 **Removing the DIVERTER VALVE**



Removing the HEAT EXCHANGER

Note

Only the M43 and M43A PROCESSORS have a HEAT EXCHANGER in the FIXER TANK. In the Clinic 1 PROCESSOR there are 2 PLUGS in the FIXER TANK instead of a HEAT EXCHANGER. If the PLUGS leak, remove them and install new PLUGS by following Steps 1 through 4 and Steps 9 and 10 below for removing the HEAT EXCHANGER.

[1] Check that:

- PROCESSOR is de-energized
- main power is disconnected
- TOP COVER is removed

[2] Drain the DEVELOPER TANK and the FIXER TANK.

[3] Shut off the WATER SUPPLY.

[4] Remove the DEVELOPER RACK or the FIXER RACK, as necessary.

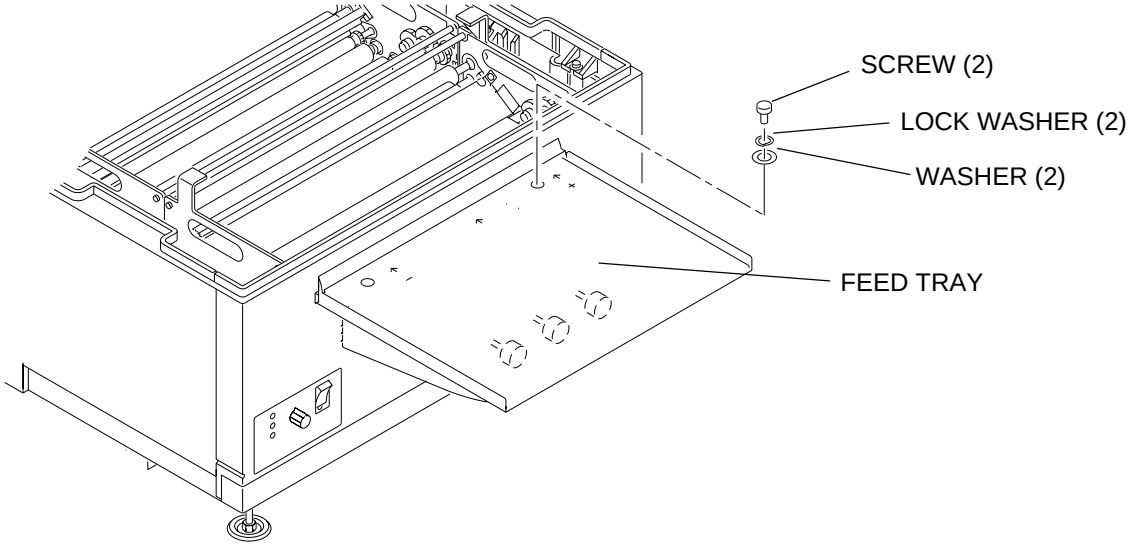
Important

Only do the next 4 steps if you are removing the **DEVELOPER** HEAT EXCHANGER. The following steps provide instructions on how to access the **DEVELOPER** HEAT EXCHANGER.

[5] Remove the FEED TRAY by removing:

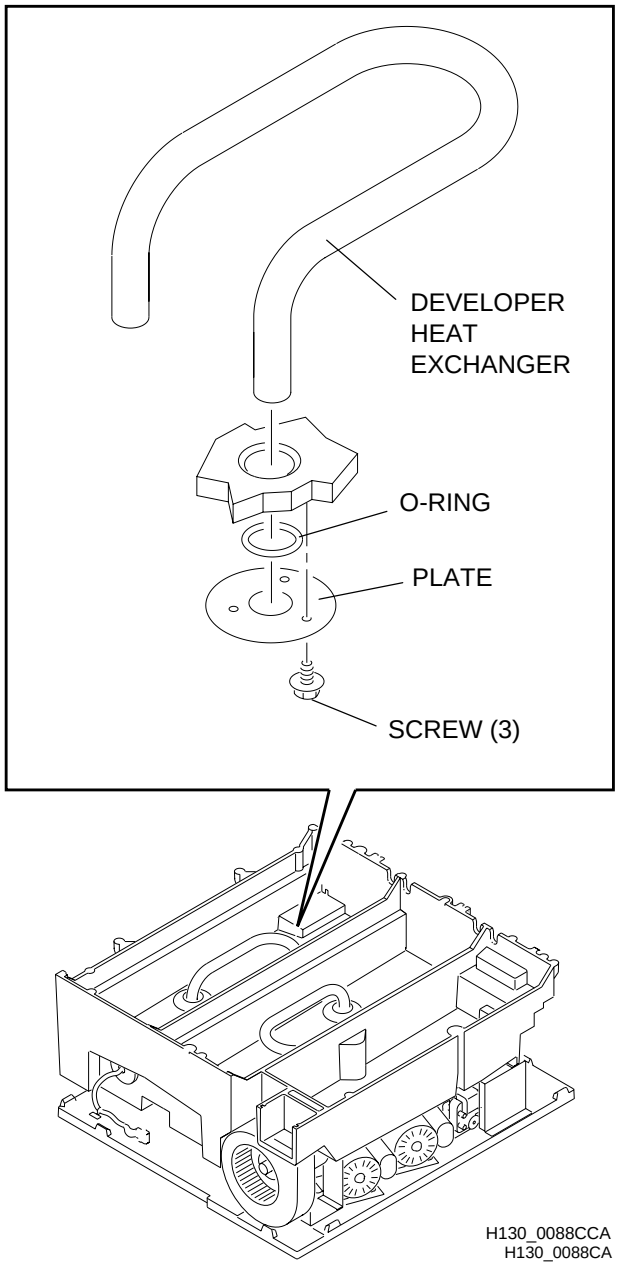
- 2 SCREWS
- 2 LOCK WASHERS
- 2 WASHERS

Figure 60 **Removing the FEED TRAY**



H130_0084BCA
H130_0084BA

Figure 61 **Removing a DEVELOPER HEAT EXCHANGER**



[6] Remove the DRAIN VALVE KNOBS by removing the SETSCREWS securing them.

[7] Remove the DRYER TEMPERATURE CONTROL KNOB.

[8] Remove the FRONT ACCESS PANEL by loosening the 2 SCREWS.

Important

Only do the next 2 steps if you are removing the **FIXER** HEAT EXCHANGER in an M43 or M43A PROCESSOR. The following steps provide instructions on how to access the **FIXER** HEAT EXCHANGER.

[9] Remove the DRIVE SIDE ACCESS PANEL by loosening the 2 SCREWS.

[10] Slide out the ELECTRICAL BOX from the **Drive** side of the PROCESSOR.

[11] Place a towel or sponge under the HOSES connected to the HEAT EXCHANGER to absorb any spilled water.

[12] Using the EXTENSION TOOL TL-4571, remove the 2 input and output SCREW CLAMPS for the HEAT EXCHANGER you are removing. See Figures 63 and 64 on Pages 75 and 76.

[13] Remove the HOSES from the HEAT EXCHANGER FITTING one at a time.

[14] Remove the 3 SCREWS securing the PLATE on each FITTING.

[15] Remove the PLATE and O-RING from the HEAT EXCHANGER on each FITTING (input and output).

[16] Remove the HEAT EXCHANGER from the bottom of the SUMP TANK.

[17] Install the HEAT EXCHANGER by reversing the steps above.

(a) Be sure to install a new O-RING.

(b) Install the HEAT EXCHANGER so that there is a (½ in.) space between it and the bottom of the TANK.

(c) To prevent overtightening the 3 SCREWS and to prevent stripping the SCREW holes in the TANKS, follow the recommendations below.

Do **not** use power tools.

First, partially tighten each of the 3 SCREWS.

Then, tighten each of the 3 SCREWS securely.

[18] Before installing the DRAIN VALVE KNOBS, check that all 3 DRAIN VALVES are closed.

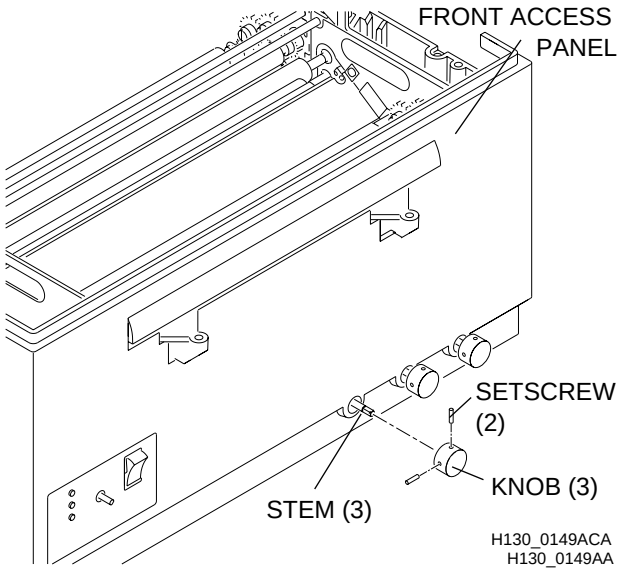
[19] When installing the 3 DRAIN VALVE KNOBS, be sure to do the following:

(a) Align the SETSCREW of the KNOB with the flat section of the STEM.

(b) Leave a 3 mm (⅛ in.) gap between the FRONT ACCESS PANEL and the back of the KNOBS.

(c) Secure the KNOBS using the 2 SETSCREWS provided for each.

Figure 62 **Installing the KNOBS for the DRAIN VALVES**

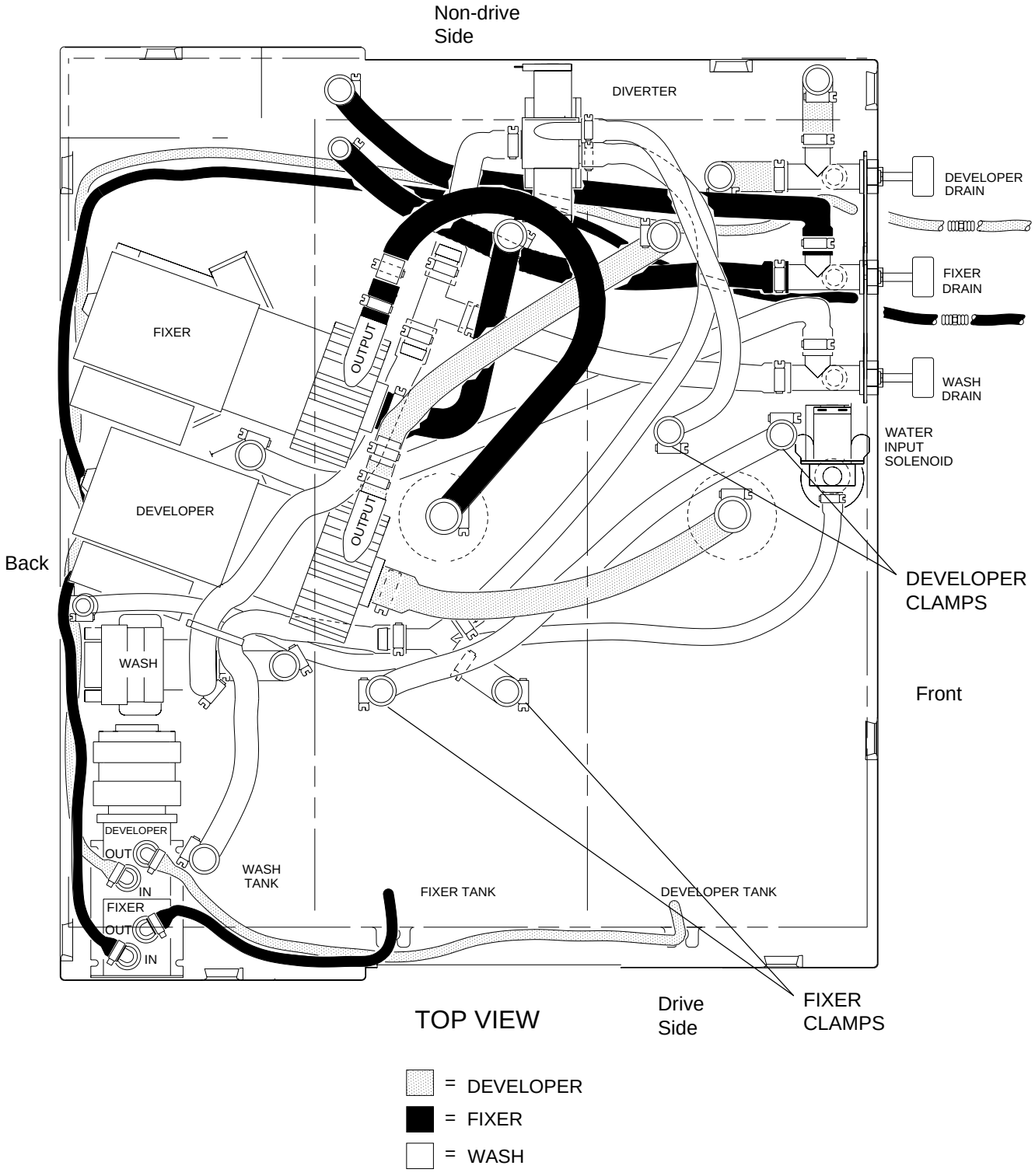


[20] Fill the PROCESSOR TANK with water and check for water leaks.

[21] Use the Service Routine to check for the correct operation of the DEVELOPER COOLING SOLENOID and the WASH PUMP. See the Diagnostics Manual, Publication Number 981093.

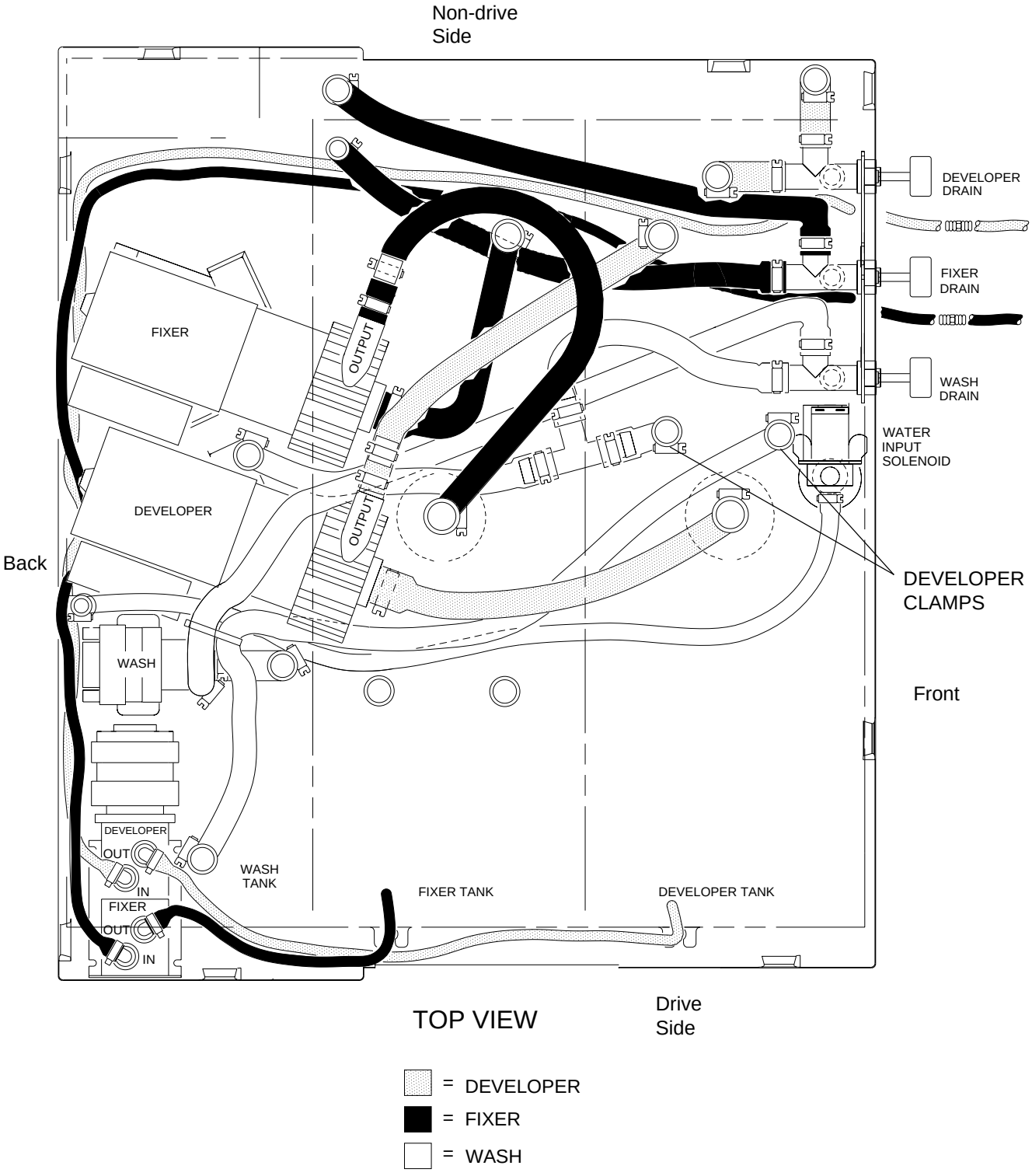
(a) Check for leaks.

Figure 63 **Removing the SCREW CLAMPS on the HEAT EXCHANGER on an M43 or M43A PROCESSOR**



H130_0125ECA
H130_0125EA

Figure 64 **Removing the SCREW CLAMPS on the HEAT EXCHANGER on a Clinic 1 PROCESSOR**



H130_0137ECA
H130_0137EA

Cleaning the WASH INLET BAR

Important

This procedure applies to the United Kingdom only.

[1] Remove:

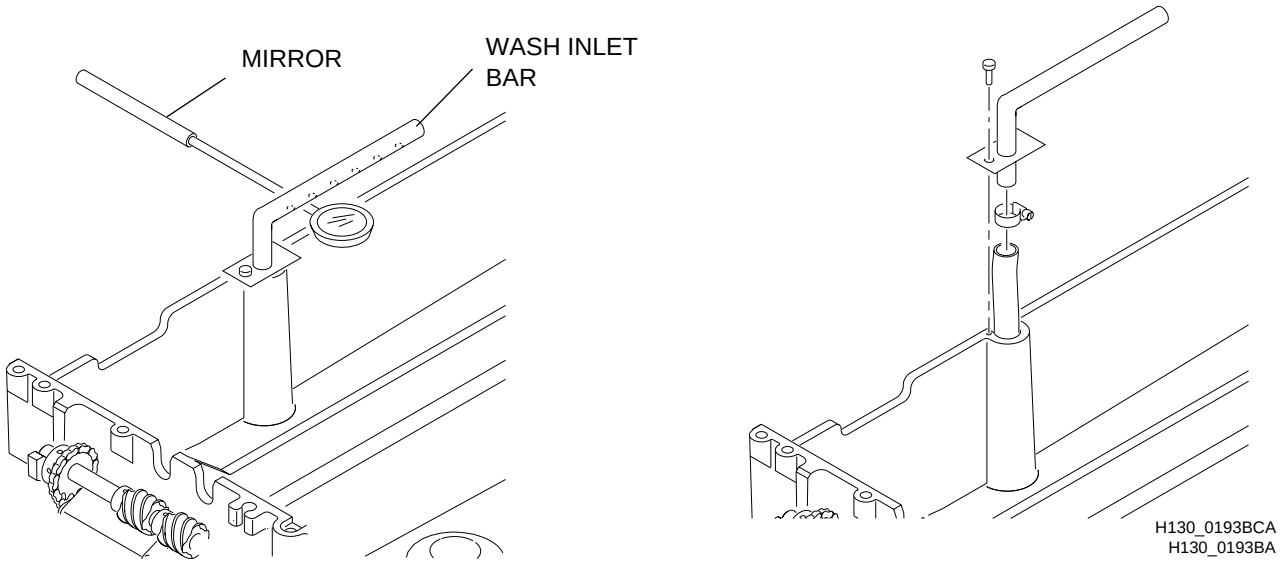
- TOP COVER
- BACK ACCESS PANEL
- DRYER RACK
- WASH RACK

[2] Drain the WASH TANK.

[3] Place a MIRROR under the WASH INLET BAR to check for obstructions in the holes in the INLET BAR.

[4] If the holes are obstructed, continue with the procedure.

Figure 65 **Removing the WASH INLET BAR**



Important

Some solution may leak. Be ready to wipe up any spilled solution.

[5] Remove the WASH INLET BAR.

[6] Clean the holes in the WASH INLET BAR.

(a) Use a solution of 50% vinegar and 50% water and a BOTTLE BRUSH TL-4833 or a TOOTHBRUSH to clean the outside of the WASH INLET BAR.

(b) Wipe the WASH INLET BAR with a clean, damp, lint-free cloth to remove the vinegar and water solution.

[7] Energize the PROCESSOR.

[8] Use the Service Routine to operate of the WATER INPUT SOLENOID. Operate the SOLENOID for at least 1 minute to rinse the WASH INLET BAR and the WASH TANK.

[9] Install:

- RACKS
- BACK ACCESS PANEL
- TOP COVER

Section 6: Electrical

Removing the 100 CIRCUIT BOARD

Important

Only qualified service personnel should service the PROCESSOR.

Important

All the procedures in this section require that you de-energize the PROCESSOR, turn off the main power at the wall connection, and remove the TOP COVER before beginning the first step of the service procedure.

Warning

Use ESD precautions.

[1] Check that:

- PROCESSOR is de-energized
- main power is disconnected
- TOP COVER is removed

[2] Remove the DRIVE SIDE ACCESS PANEL by loosening the 2 SCREWS.

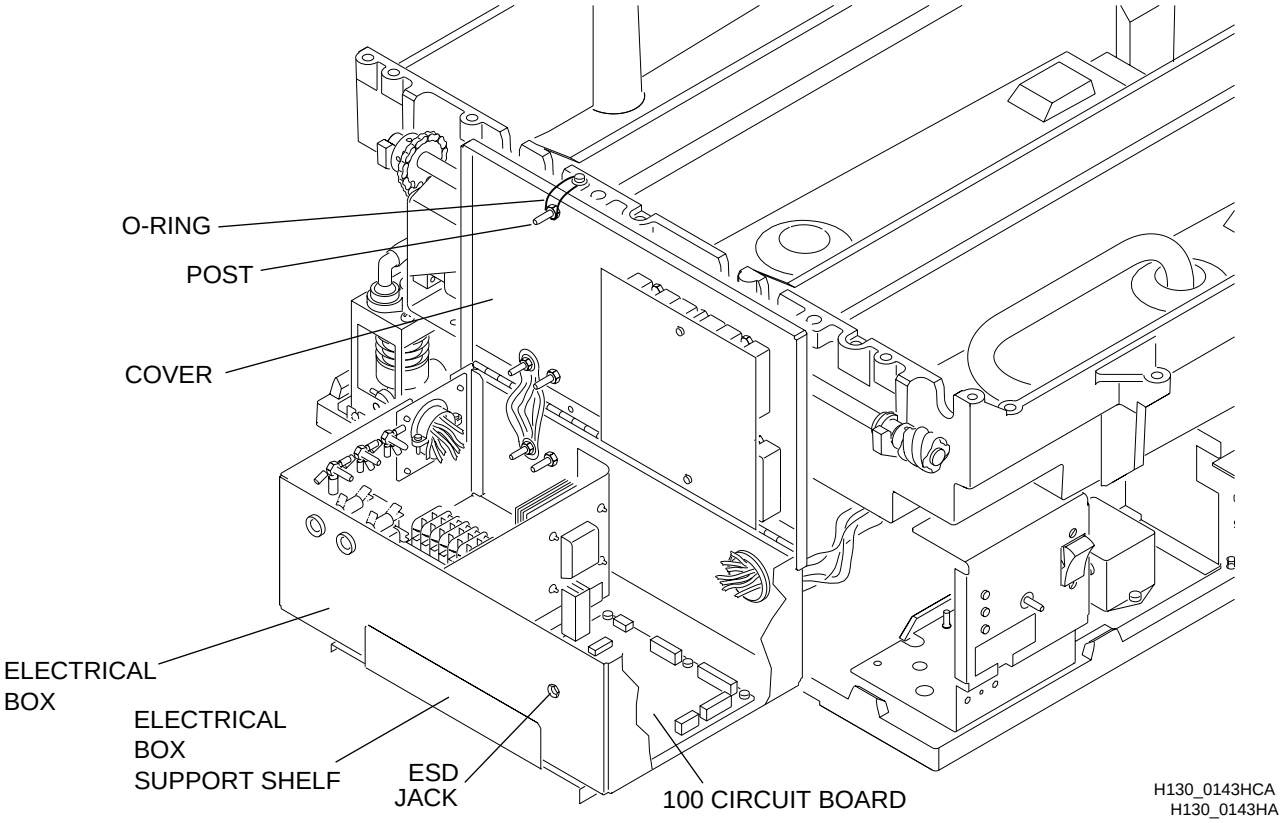
[3] Pull out the SUPPORT SHELF for the ELECTRICAL BOX from the **Drive** side of the PROCESSOR.

[4] Pull out the ELECTRICAL BOX.

[5] Connect your ESD protective wrist strap to the JACK on the ELECTRICAL BOX.

[6] Open the TOP COVER of the ELECTRICAL BOX. Fasten the COVER open by placing the O-RING on the PROCESSOR TANK around the POST on the ELECTRICAL BOX COVER.

Figure 66 **Pulling Out the ELECTRICAL BOX**



Note

When doing the steps below, see Figures 67 and 68 on Pages 80 and 81.

[7] Remove the 7 CABLES connected to the 100 CIRCUIT BOARD.

[8] Record the positions of the JUMPERS at:

E-1 E-4

E-2 E-5

[9] Using SOCKET EXTRACTION TOOL TL-4430, remove the SOFTWARE PROM U5 from its SOCKET on the 100 CIRCUIT BOARD. Place the SOFTWARE PROM U5 in a container safe from ESD.

[10] Remove and keep the 6 SCREWS securing the 100 CIRCUIT BOARD to the ELECTRICAL BOX.

Important

Make sure that the KEYED CORNER of the PROM aligns with the KEYED CORNER of the SOCKET.

[11] Place the SOFTWARE PROM U5 into the empty SOCKET on the new 100 CIRCUIT BOARD.

[12] Press the SOFTWARE PROM U5 firmly into the SOCKET.

[13] Install the 6 SCREWS removed in Step 10 to secure the new 100 CIRCUIT BOARD to the ELECTRICAL BOX.

[14] Install the 7 CABLES that you removed in Step 7. Check that they seat fully.

[15] Check that all 5 DIP SWITCHES at S1 are in the OFF position.

[16] Check that the JUMPERS are installed according to the position recorded in Step 8.

[17] Insert INTERLOCK TOOL TL-4740 into the AC INTERLOCK SWITCH S5, located near the DRYER ASSEMBLY on the drive side of the PROCESSOR.

[18] Place a MAGNET on the DC INTERLOCK SWITCH S6 on the DRYER PLENUM BRACKET.

[19] Check that all TANKS are filled with solution.

[20] Connect the main power and energize the PROCESSOR.

[21] Do the procedures titled “Calibrating the DEVELOPER TEMPERATURE DISPLAY of the M43 and M43A Only” on Page 84 and “Setting the Developer Temperature” on Page 86. Also see the procedure for checking and adjusting the replenishment rates in either the Operator Manual, Publication Number 981089, or the Installation Instructions, Publication Number 981088.

[22] Close the COVER on the ELECTRICAL BOX.

[23] De-energize the PROCESSOR.

[24] Disconnect your ESD wrist strap.

[25] Slide the SUPPORT SHELF and the ELECTRICAL BOX into the PROCESSOR.

[26] Install:

- DRIVE SIDE ACCESS PANEL
- TOP COVER

Figure 67 **Setting the JUMPERS and the DIP SWITCHES on the 100 CIRCUIT BOARD**

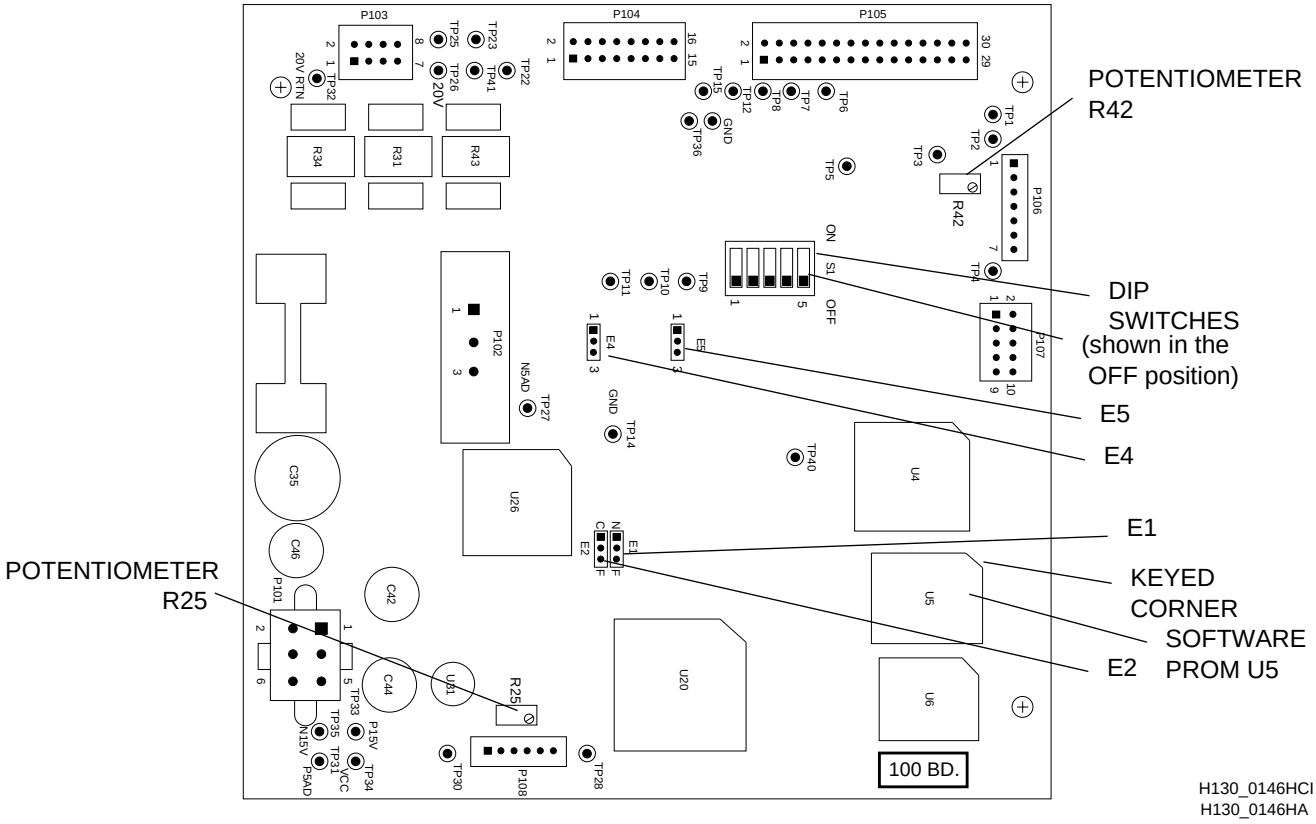
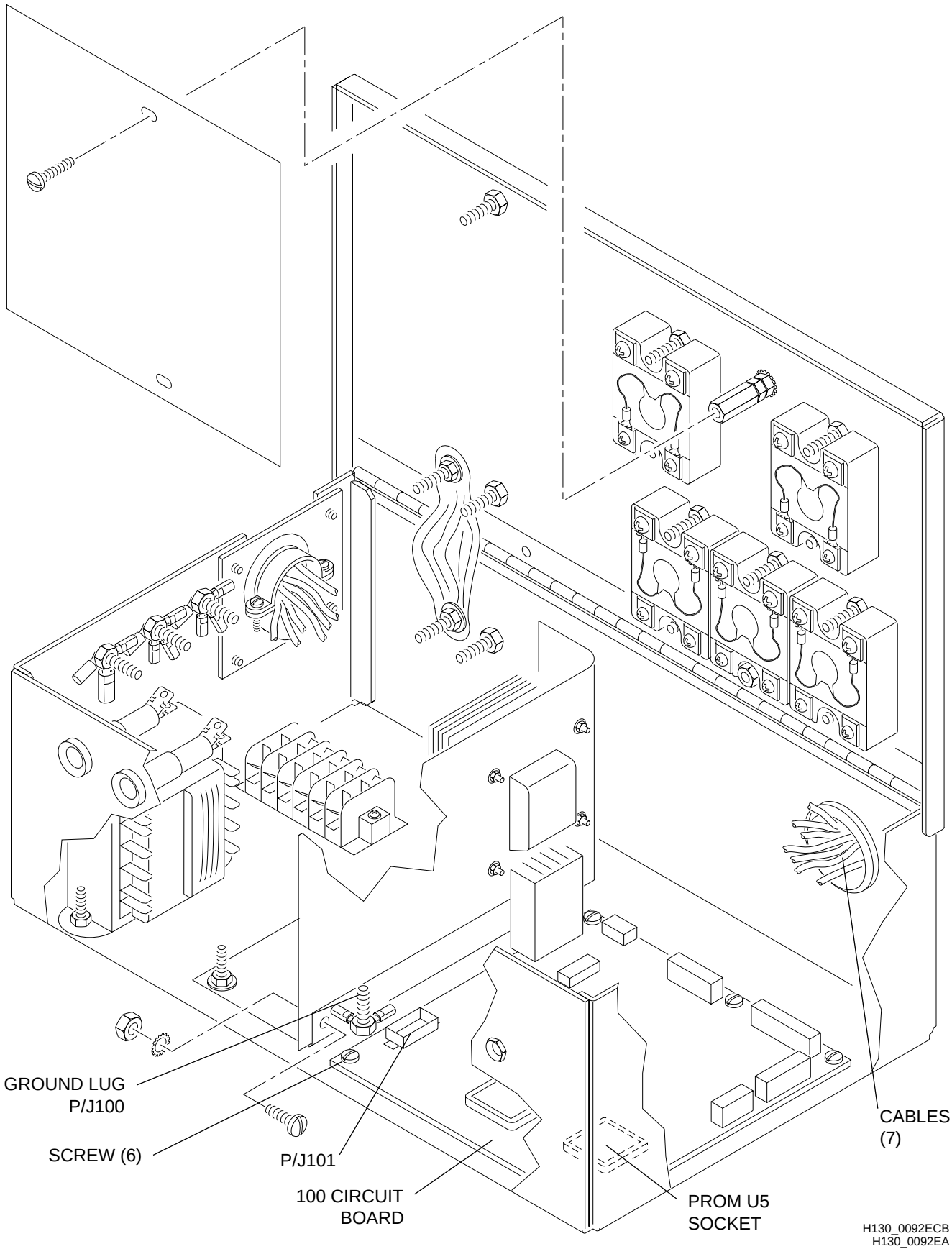


Figure 68 **Removing the 100 CIRCUIT BOARD**



Removing the STATUS INDICATORS

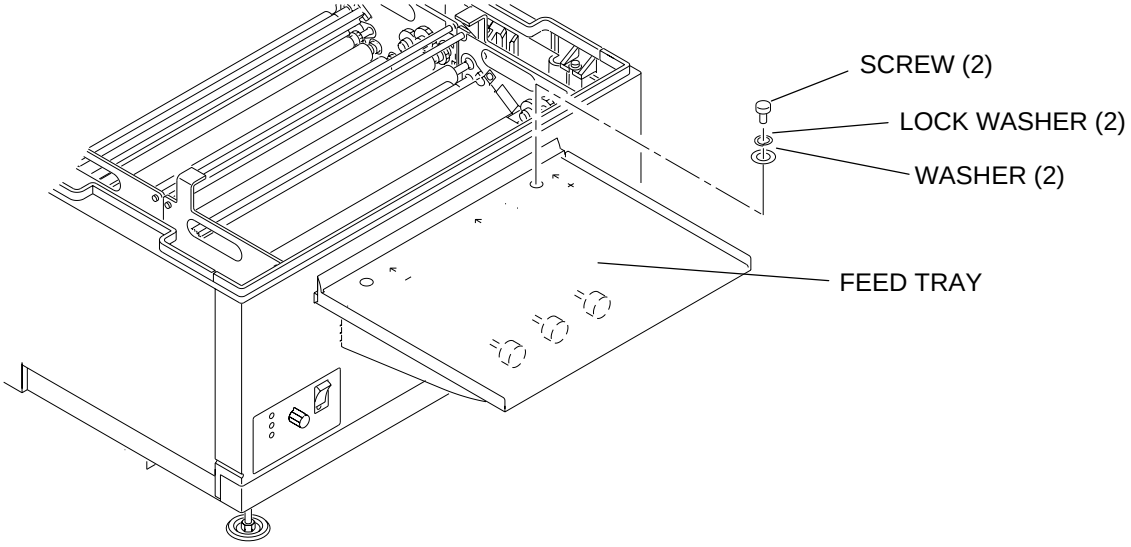
[1] Check that:

- PROCESSOR is de-energized
- main power is disconnected
- TOP COVER is removed

[2] Remove the FEED TRAY by removing:

- 2 SCREWS
- 2 LOCK WASHERS
- 2 WASHERS

Figure 69 **Removing the FEED TRAY**



[3] Remove the DRAIN VALVE KNOBS by removing the SETSCREWS securing them.

[4] Remove the DRYER TEMPERATURE CONTROL KNOB.

[5] Remove the FRONT ACCESS PANEL by loosening the 2 SCREWS.

[6] Disconnect CONNECTOR P/J12.

[7] Remove the JAM NUT from the malfunctioning INDICATOR LED.

[8] Using PIN EXTRACTION TOOL TL-2105, remove the appropriate PINS from CONNECTOR J12. See the table.

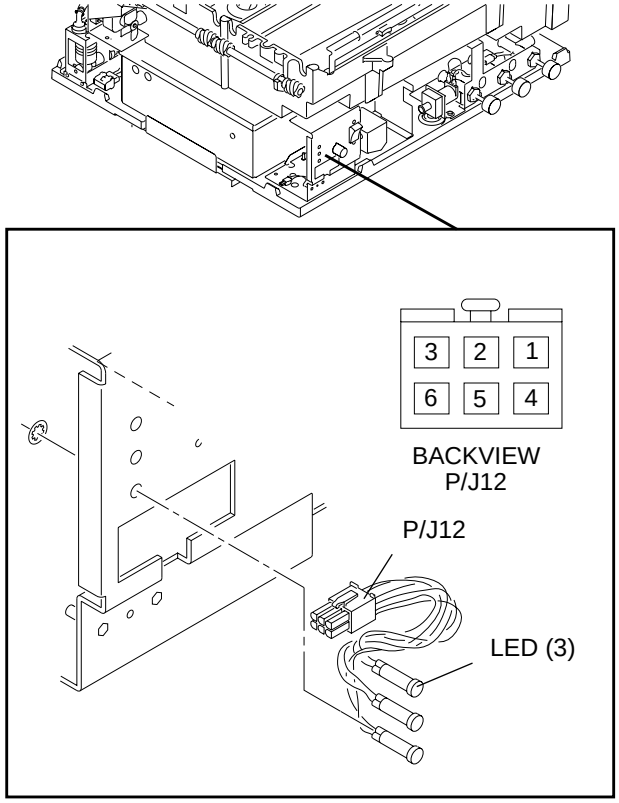
Table 1 PIN Connections for the STATUS INDICATORS

STATUS INDICATOR	White Wire Connects To:	Red Wire Connects To:
READY INDICATOR DS1	PIN 1	PIN 2
WAIT INDICATOR DS2	PIN 3	PIN 4
SERVICE INDICATOR DS3	PIN 5	PIN 6

[9] Pull the INDICATOR LED to remove the INDICATOR assembly from the DISPLAY PANEL.

[10] Reverse the steps above to install a new STATUS INDICATOR LED.

Figure 70 **Removing the STATUS INDICATORS**



H130_0233GCA
H130_0233GA

[11] Before installing the DRAIN VALVE KNOBS, check that all 3 DRAIN VALVES are closed.

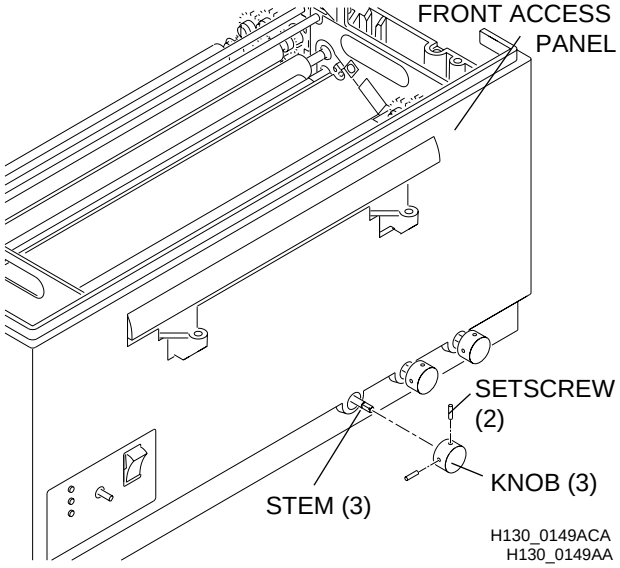
[12] When installing the 3 DRAIN VALVE KNOBS, be sure to do the following:

(a) Align the SETSCREW of the KNOB with the flat section of the STEM.

(b) Leave a 3 mm (⅛ in.) gap between the FRONT ACCESS PANEL and the back of the KNOBS.

(c) Secure the KNOBS using the 2 SETSCREWS provided for each.

Figure 71 **Installing the KNOBS for the DRAIN VALVES**



H130_0149ACA
H130_0149AA

Calibrating the DEVELOPER TEMPERATURE DISPLAY of the M43 and M43A Only

[1] Remove the TOP COVER from the PROCESSOR.

[2] Remove the DRIVE SIDE ACCESS PANEL by loosening the 2 SCREWS.

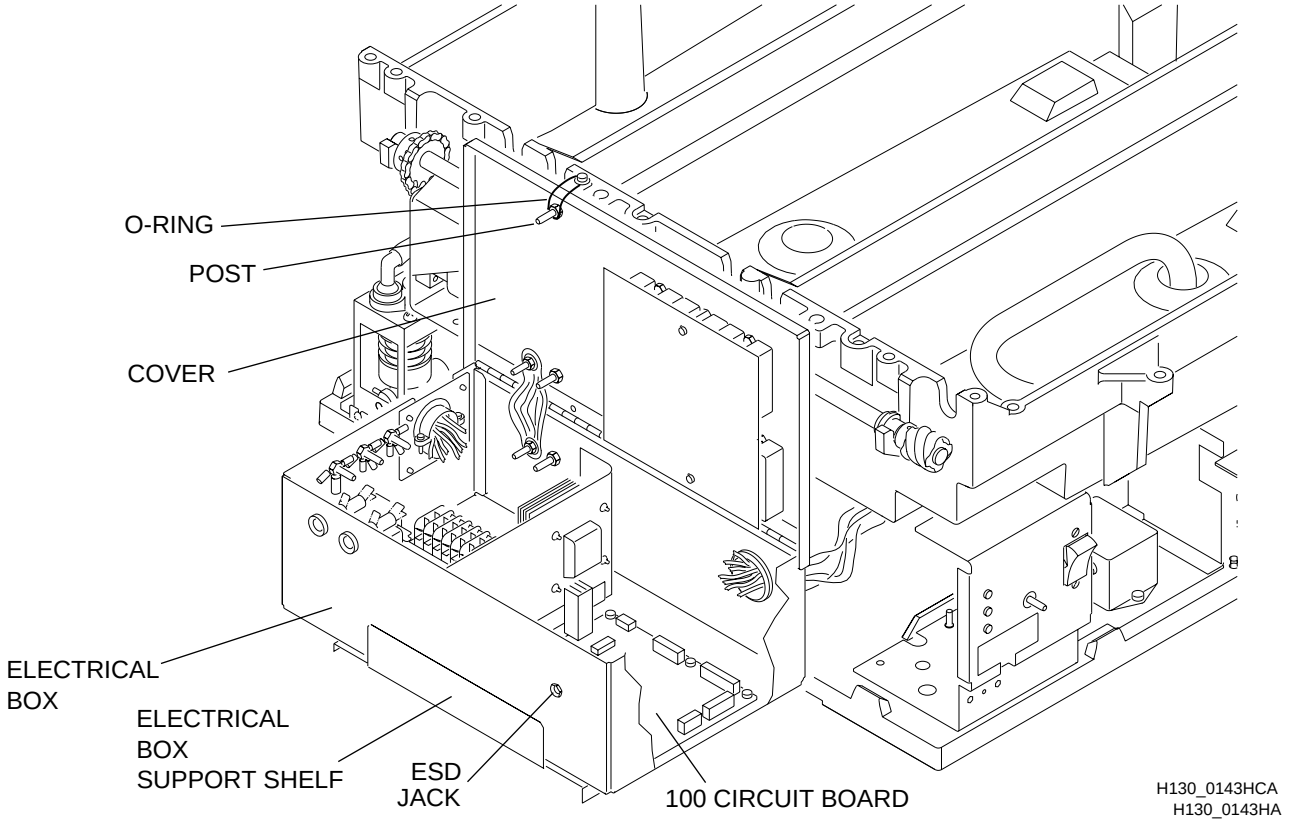
[3] Pull out the SUPPORT SHELF for the ELECTRICAL BOX from the **Drive** side of the PROCESSOR.

[4] Pull out the ELECTRICAL BOX.

[5] Connect your ESD protective wrist strap to the JACK on the ELECTRICAL BOX.

[6] Open the TOP COVER of the ELECTRICAL BOX. Fasten the COVER open by placing the O-RING on the PROCESSOR TANK around the POST on the ELECTRICAL BOX COVER.

Figure 72 **Pulling Out the ELECTRICAL BOX**

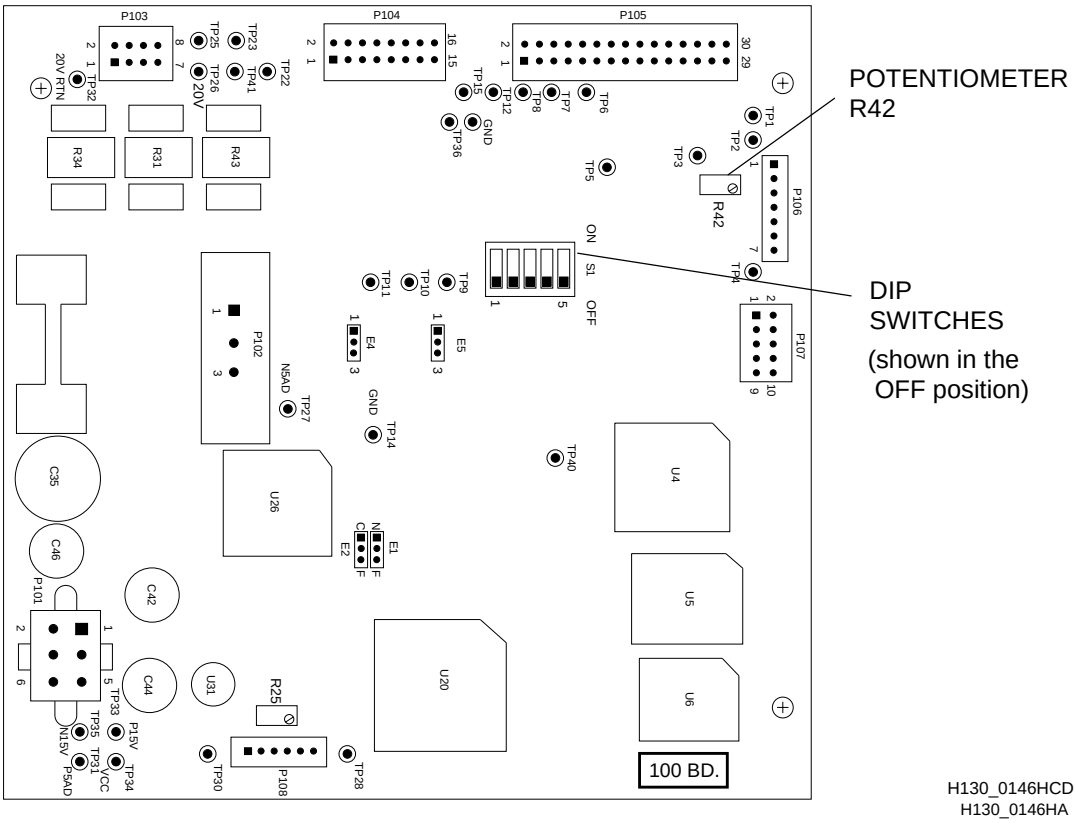


[7] Enter the diagnostic service routine by moving the 5 DIP SWITCHES at S1 on the 100 CIRCUIT BOARD to the positions outlined in Table 2.

Table 2 DIP SWITCH Positions for Service Routines

Service Routine	SWITCH 1	SWITCH 2	SWITCH 3	SWITCH 4	SWITCH 5
No Service Routines Running	Off	Off	Off	Off	Off
DEVELOPER TEMPERATURE DISPLAY (M43, M43A only)	On	On	Off	Off	On

Figure 73 **Setting the DIP SWITCHES**



[8] Check the temperature reading on the DEVELOPER TEMPERATURE DISPLAY.

(a) If the temperature displayed is 33.9°C (93.0°F), do **not** continue this procedure.

[9] Rotate POTENTIOMETER R42 on the 100 CIRCUIT BOARD as necessary until the temperature displayed is 33.9°C (93°F).

(a) Rotate R42 clockwise ↷ to increase the developer temperature reading shown on the DEVELOPER TEMPERATURE DISPLAY

(b) Rotate R42 counterclockwise ↶ to decrease the developer temperature reading shown on the DEVELOPER TEMPERATURE DISPLAY

[10] Move the 5 DIP SWITCHES at S1 to the OFF position.

[11] Close the COVER on the ELECTRICAL BOX.

[12] Disconnect your ESD wrist strap.

[13] Slide the SUPPORT SHELF and the ELECTRICAL BOX into the PROCESSOR.

[14] Install:

- DRIVE SIDE ACCESS PANEL
- TOP COVER

Setting the Developer Temperature

[1] Remove the TOP COVER from the PROCESSOR.

[2] Remove the DRIVE SIDE ACCESS PANEL by loosening the 2 SCREWS.

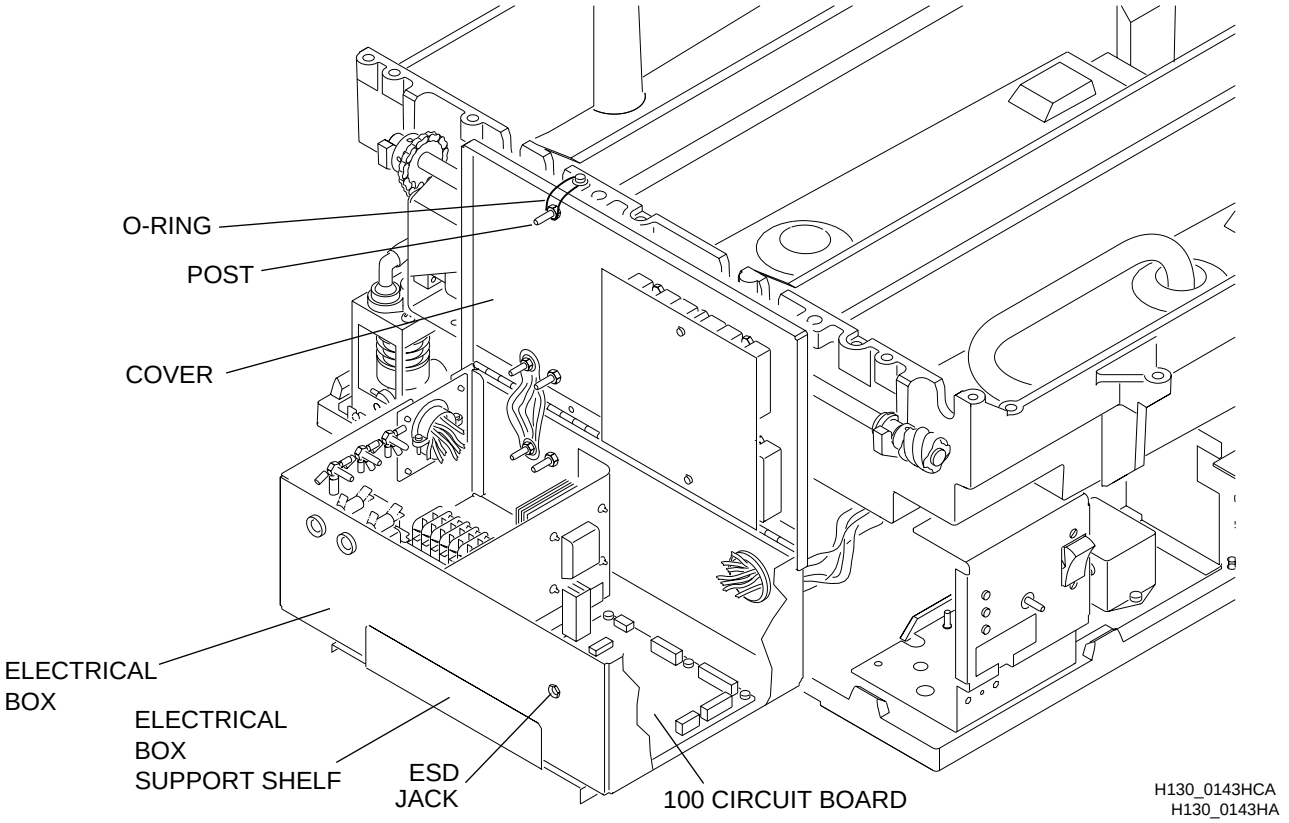
[3] Pull out the SUPPORT SHELF for the ELECTRICAL BOX from the **Drive** side of the PROCESSOR.

[4] Pull out the ELECTRICAL BOX.

[5] Connect your ESD protective wrist strap to the JACK on the ELECTRICAL BOX.

[6] Open the TOP COVER of the ELECTRICAL BOX. Fasten the COVER open by placing the O-RING on the PROCESSOR TANK around the POST on the ELECTRICAL BOX COVER.

Figure 74 **Pulling Out the ELECTRICAL BOX**



[7] Using a DIGITAL VOLTMETER on the DC scale, make the following connections on the 100 CIRCUIT BOARD:

- black PROBE to TP14 (GROUND)
- red PROBE to TP30

[8] Check the voltage reading on the VOLTMETER.

(a) For the developer temperature of 33.9°C (93.0°F), the voltage should be 1.17 V DC.

- A 40 mV change between TEST POINT TP30 and TEST POINT TP14 equals approximately 0.1°C (0.1°F) change in the setpoint temperature. See Figure 75 on Page 87.

[9] Rotate POTENTIOMETER R25 on the 100 CIRCUIT BOARD as necessary until the voltage is 1.17 V DC.

(a) Rotate R25 clockwise ↷ to increase the voltage and increase the temperature.

(b) Rotate R25 counterclockwise ↶ to decrease the voltage and decrease the temperature.

[10] Close the COVER on the ELECTRICAL BOX.

[11] Disconnect your ESD wrist strap.

[12] Slide the SUPPORT SHELF and the ELECTRICAL BOX into the PROCESSOR.

[13] Install the DRIVE SIDE ACCESS PANEL.

[14] Insert INTERLOCK TOOL TL-4740 into the AC INTERLOCK SWITCH S5.

Note

The DC INTERLOCK SWITCH S6 is only found in PROCESSORS that either have a serial number of 350 or higher, or have Mod 1 installed.

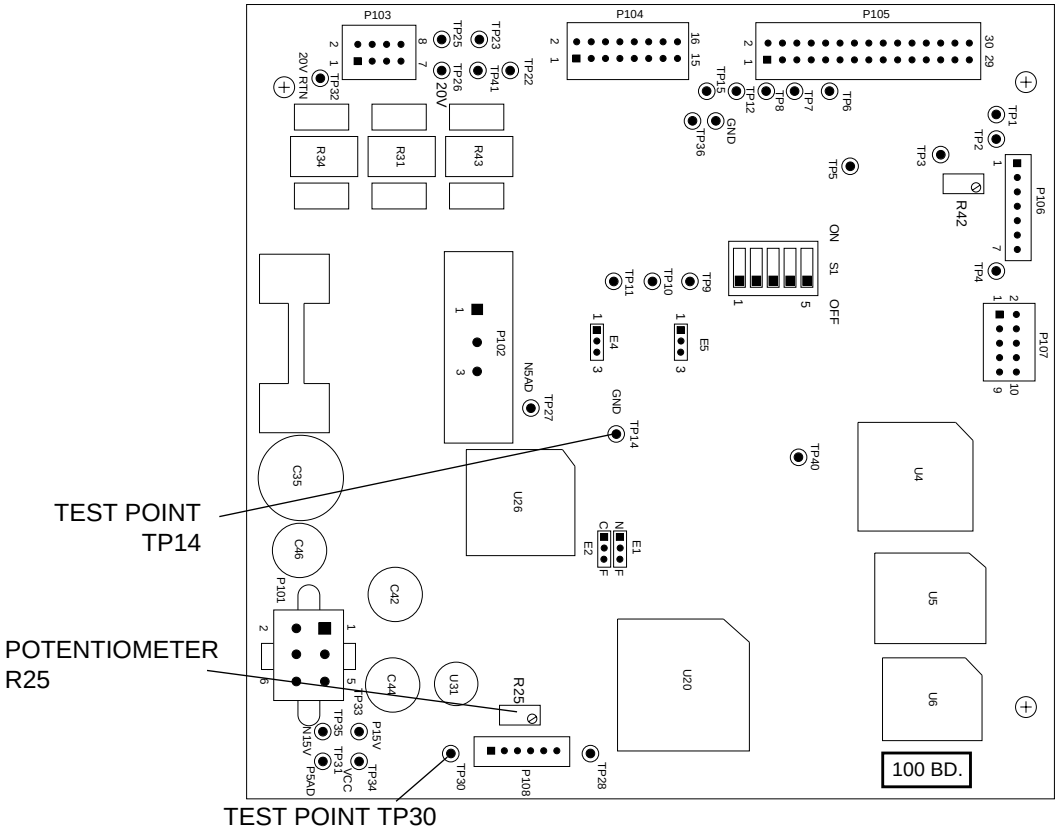
[15] If applicable, place a MAGNET on the DC INTERLOCK SWITCH S6.

[16] Allow the developer temperature to reach the correct temperature. Check the temperature using a THERMOMETER TL-4802.

[17] Remove the INTERLOCK TOOLS from the AC and DC INTERLOCK SWITCHES.

[18] Install the TOP COVER.

Figure 75 **Setting the Developer Temperature**



H130_0146HCB
H130_0146HA

Removing the POWER SUPPLY

ESD
Possible damage from electrostatic discharge.

Note
See Figure 68 on Page 81 when doing this procedure.

[1] Check that:
- PROCESSOR is de-energized
- main power is disconnected
- TOP COVER is removed

[2] Remove the DRIVE SIDE ACCESS PANEL by loosening the 2 SCREWS.

[3] Pull out the SUPPORT SHELF for the ELECTRICAL BOX from the **Drive** side of the PROCESSOR.

[4] Pull out the ELECTRICAL BOX.

[5] Connect your ESD protective wrist strap to the JACK on the ELECTRICAL BOX.

[6] Open the TOP COVER of the ELECTRICAL BOX. Fasten the COVER open by placing the O-RING on the PROCESSOR TANK around the POST on the ELECTRICAL BOX COVER.

Figure 76 **Pulling Out the ELECTRICAL BOX**

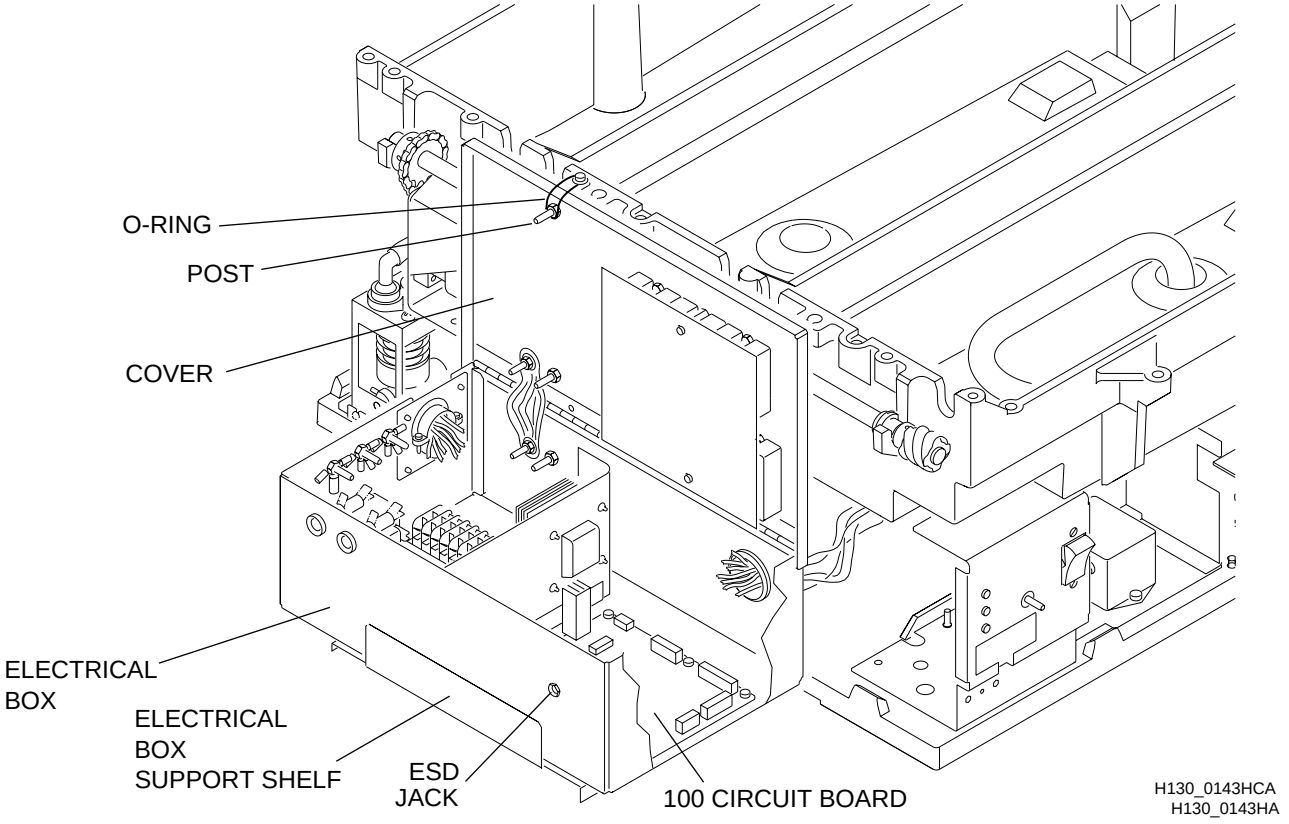
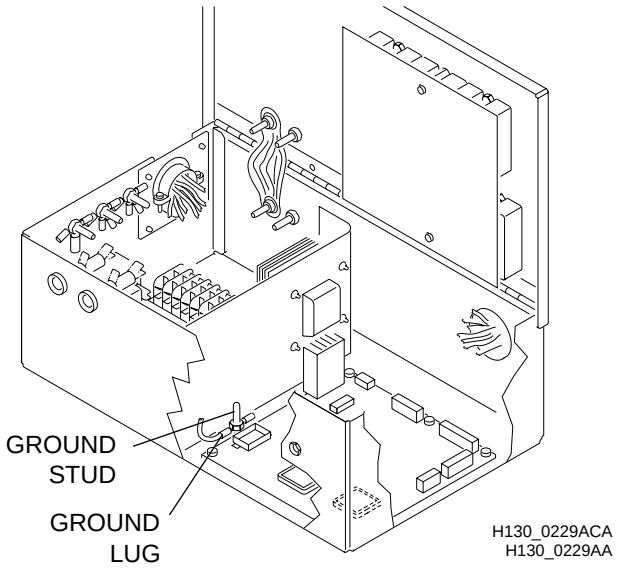


Figure 77 **Removing the GROUND LUG**



[7] Remove CONNECTOR P/J101 from the 100 CIRCUIT BOARD.

[8] Remove the GROUND LUG from the GROUND STUD near P/J101.

[9] Identify and remove the 4 INPUT WIRES from the POWER SUPPLY.

[10] Remove the 2 NUTS and 2 LOCK WASHERS from each of the 2 STUDS on the bottom of the ELECTRICAL BOX.

[11] Remove the POWER SUPPLY.

[12] Install the POWER SUPPLY by reversing the steps above.

[13] Connect the main power and energize the PROCESSOR.

[14] Check the output voltage at the following locations on the 100 CIRCUIT BOARD:

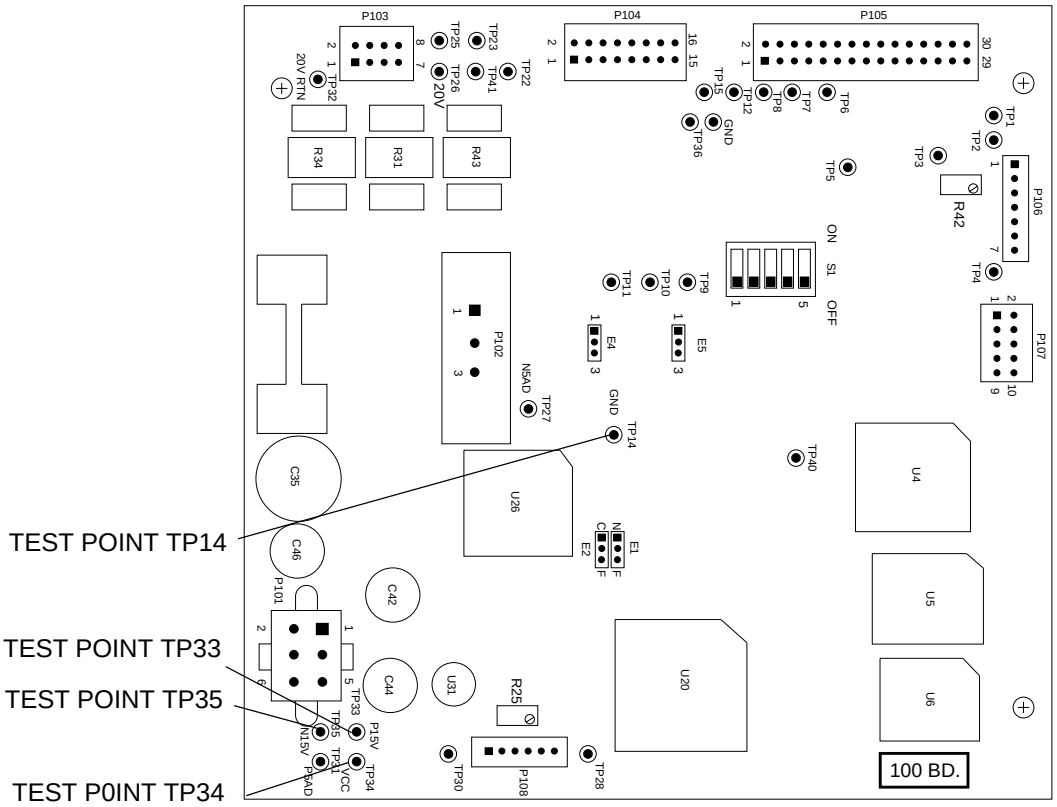
- TP33 +15 V DC
- TP34 + 5 V DC
- TP35 -15 V DC
- TP14 Ground

[15] Close the COVER on the ELECTRICAL BOX.

[16] Disconnect your ESD wrist strap.

[17] Slide the SUPPORT SHELF and the ELECTRICAL BOX into the PROCESSOR.

Figure 78 **Checking Voltage at TEST POINTS**



H130_0146HCF
H130_0146HA

Removing the LINE FILTER (FL1)

Warning

De-energizing the PROCESSOR does **not** remove the dangerous voltage from the LINE FILTER. Before doing this procedure, check that the PROCESSOR is disconnected from the main power supply.

Note

See Figure 80 on Page 92 when doing this procedure.

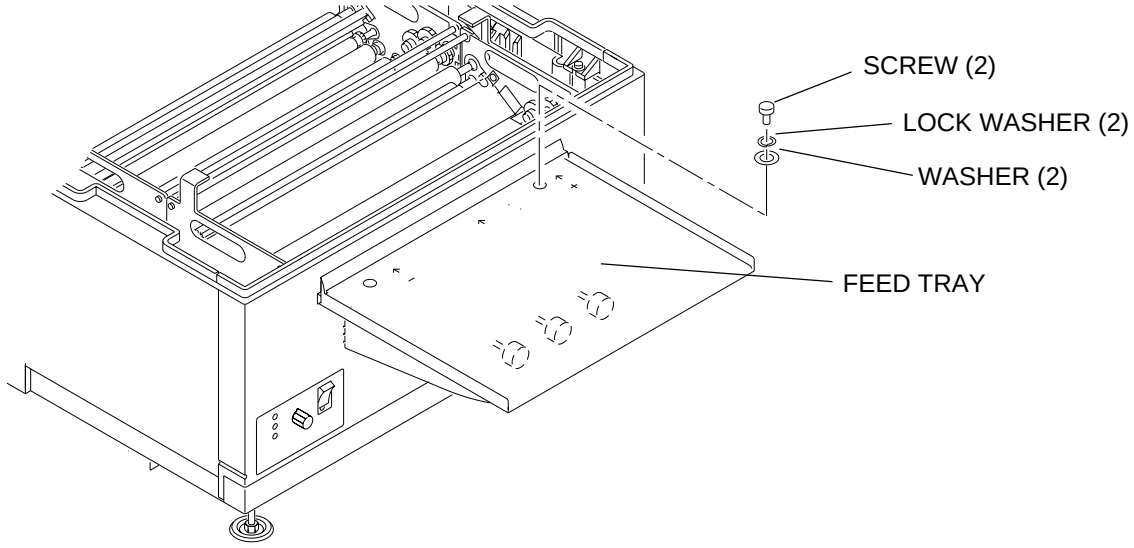
[1] Check that:

- PROCESSOR is de-energized
- main power is disconnected
- TOP COVER is removed

[2] Remove the FEED TRAY by removing:

- 2 SCREWS
- 2 LOCK WASHERS
- 2 WASHERS

Figure 79 **Removing the FEED TRAY**



H130_0084BCA
H130_0084BA

[3] Remove the DRAIN VALVE KNOBS by removing the SETSCREWS securing them.

[4] Remove the DRYER TEMPERATURE CONTROL KNOB.

[5] Remove the FRONT ACCESS PANEL by loosening the 2 SCREWS.

[6] Identify and remove the wires at the LINE FILTER.

Important

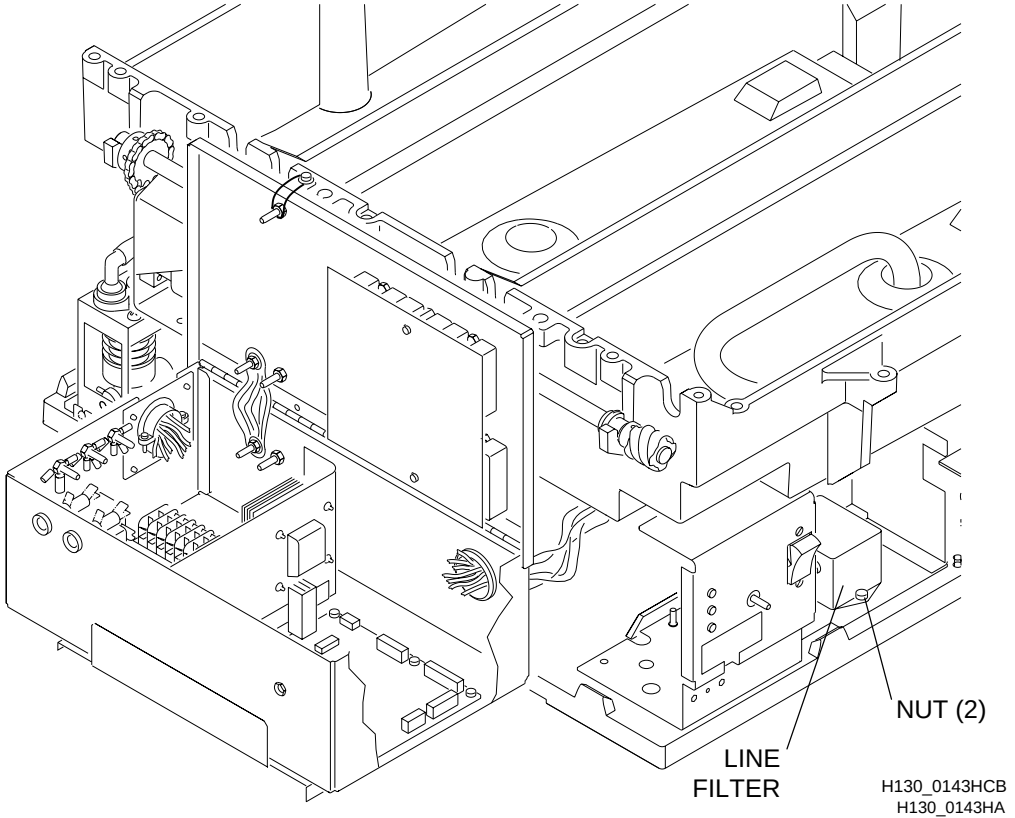
Identify the line and load labeling so that you can connect the wires to the new LINE FILTER in their correct orientation.

[7] Remove and keep the 2 NUTS securing the LINE FILTER.

[8] Remove the LINE FILTER.

[9] Install the LINE FILTER by reversing the steps above.

Figure 80 **Removing the LINE FILTER**



[10] Before installing the DRAIN VALVE KNOBS, check that all 3 DRAIN VALVES are closed.

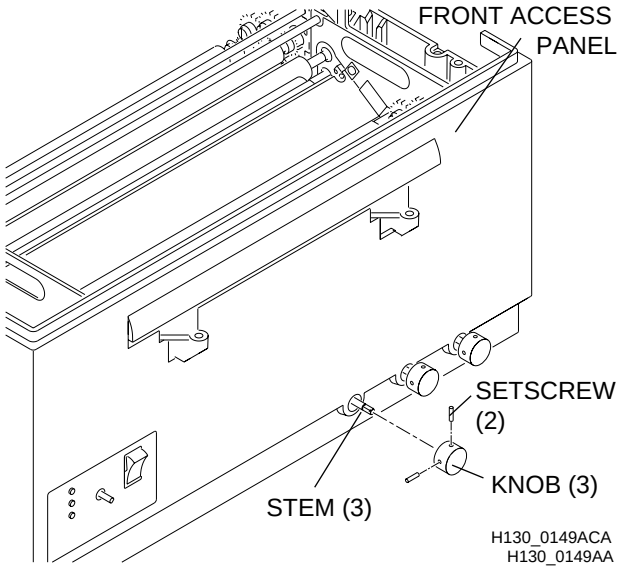
[11] When installing the 3 DRAIN VALVE KNOBS, be sure to do the following:

(a) Align the SETSCREW of the KNOB with the flat section of the STEM.

(b) Leave a 3 mm (⅛ in.) gap between the FRONT ACCESS PANEL and the back of the KNOBS.

(c) Secure the KNOBS using the 2 SETSCREWS provided for each.

Figure 81 **Installing the KNOBS for the DRAIN VALVES**



Changing the FILM SENSORS

Warning

Use ESD precautions.

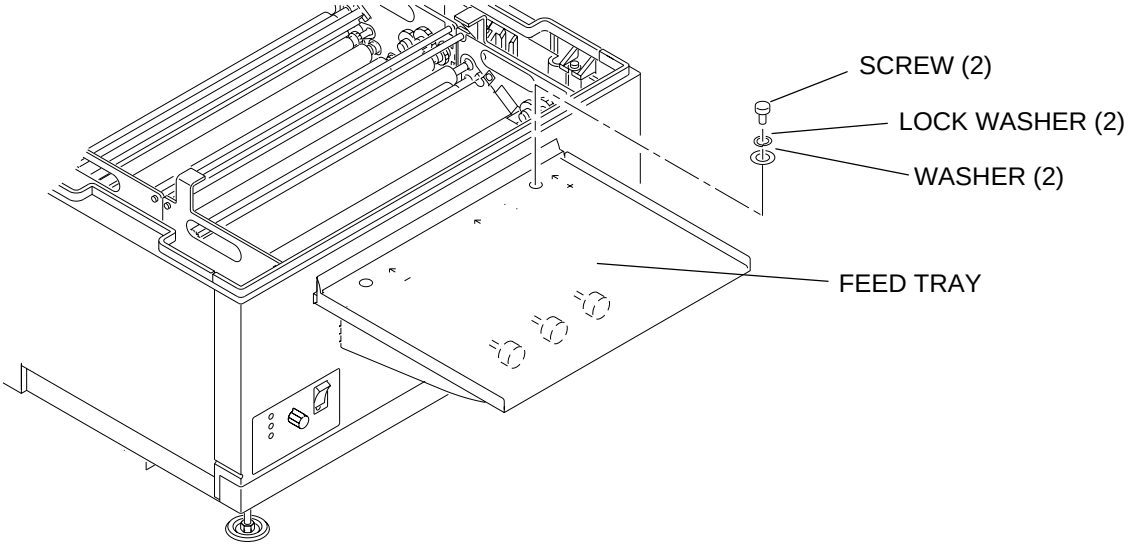
[1] Check that:

- PROCESSOR is de-energized
- main power is disconnected

[2] Remove the FEED TRAY by removing:

- 2 SCREWS
- 2 WASHERS
- 2 LOCK WASHERS

Figure 82 **Removing the FEED TRAY**



H130_0084BCA
H130_0084BA

[3] Remove:

- DRAIN VALVE KNOBS by removing the 2 SETSCREWS
- DRYER TEMPERATURE CONTROL KNOB
- FRONT ACCESS PANEL by loosening the 2 SCREWS
- DRIVE SIDE ACCESS PANEL by loosening the 2 SCREWS

[4] See Figure 84 on Page 95. From the FILM SENSOR BAR remove:

- 2 SCREWS
- 2 LOCK WASHERS
- 2 WASHERS

[5] Cut the WIRE TIES as necessary to disconnect the CONNECTORS. Note the position of the WIRE TIES for later installation.

[6] Disconnect:

- CONNECTOR P/J14 for FILM SENSOR U7 (left side of FEED TRAY)
- CONNECTOR P/J15 for FILM SENSOR U8 (center of FEED TRAY)
- CONNECTOR P/J16 for FILM SENSOR U9 (right side of FEED TRAY)

Caution

Do **not** damage the bottom of the FILM SENSOR BAR. The FILM SENSOR BAR also acts as a GUIDE SHOE.

[7] Remove the 2 SCREWS and 2 NUTS securing the FILM SENSOR that you wish to remove. See Figure 84 on Page 95.

[8] Remove the FILM SENSOR from the FILM SENSOR BAR.

[9] Install the FILM SENSOR by reversing the steps above.

[10] Install WIRE TIES onto the wires to keep them away from the GEARS of the DEVELOPER RACK and the MAIN DRIVE SHAFT. Install any WIRE TIES removed in Step 5.

[11] Before installing the DRAIN VALVE KNOBS, check that all 3 DRAIN VALVES are closed.

[12] When installing the 3 DRAIN VALVE KNOBS, be sure to do the following:

(a) Align the SETSCREW of the KNOB with the flat section of the STEM.

(b) Leave a 3 mm (⅛ in.) gap between the FRONT ACCESS PANEL and the back of the KNOBS.

(c) Secure the KNOBS using the 2 SETSCREWS provided for each.

[13] Use the Service Routine to check for the correct operation of the SENSORS. See the Diagnostic Manual, Publication Number 981093.

Figure 83 **Installing the KNOBS for the DRAIN VALVES**

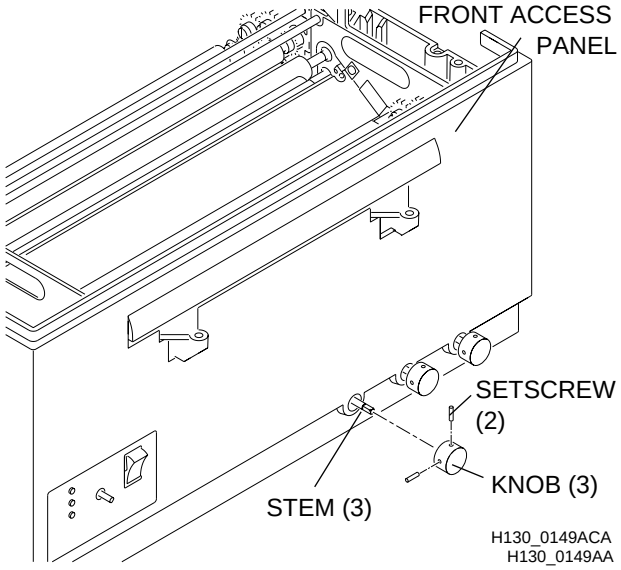
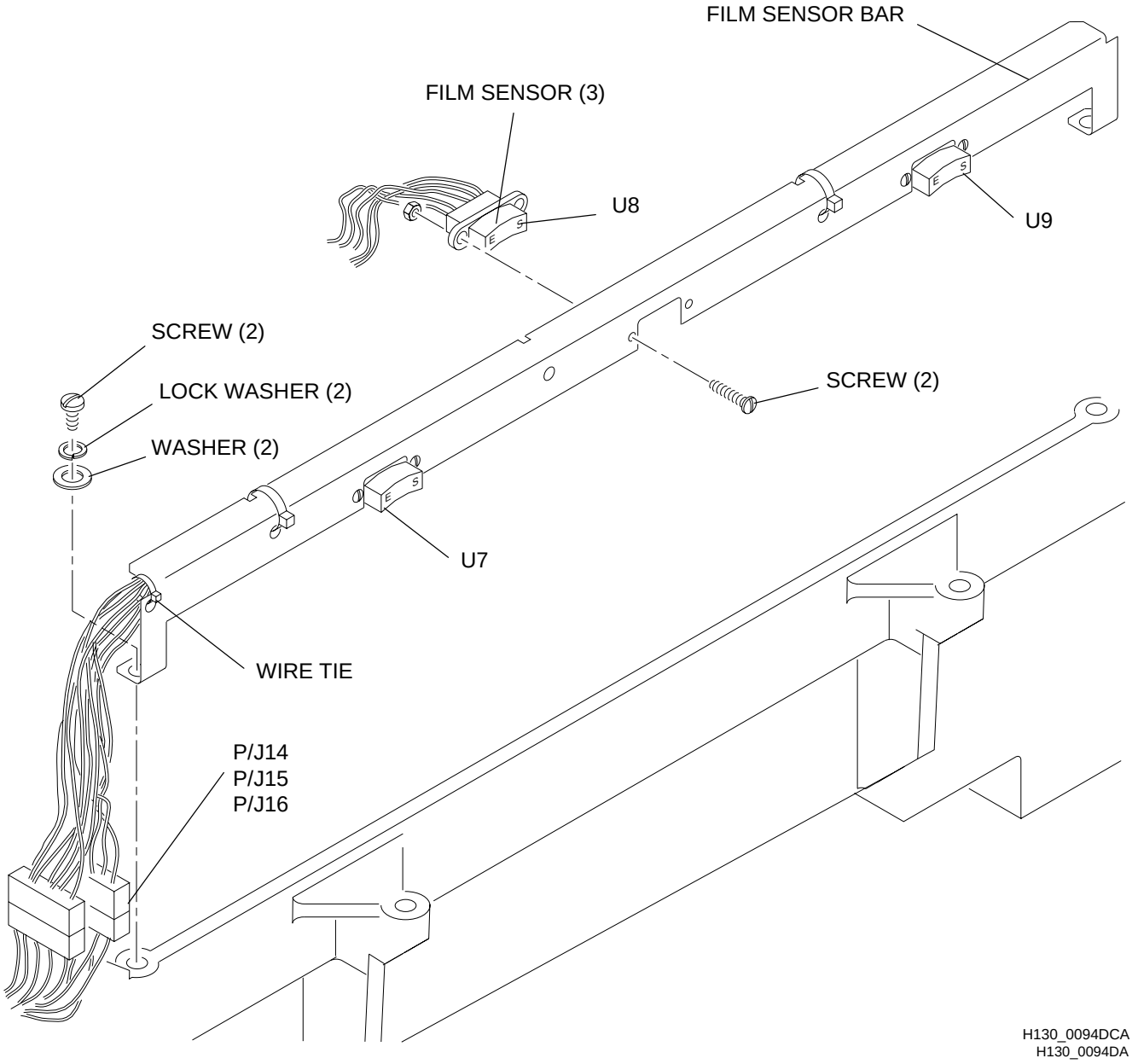


Figure 84 **Removing the FILM SENSORS**



Removing the SOLID STATE RELAYS

[1] Check that:

- PROCESSOR is de-energized
- main power is disconnected

[2] Remove the DRIVE SIDE ACCESS PANEL by loosening the 2 SCREWS.

[3] Pull out the SUPPORT SHELF for the ELECTRICAL BOX from the **Drive** side of the PROCESSOR.

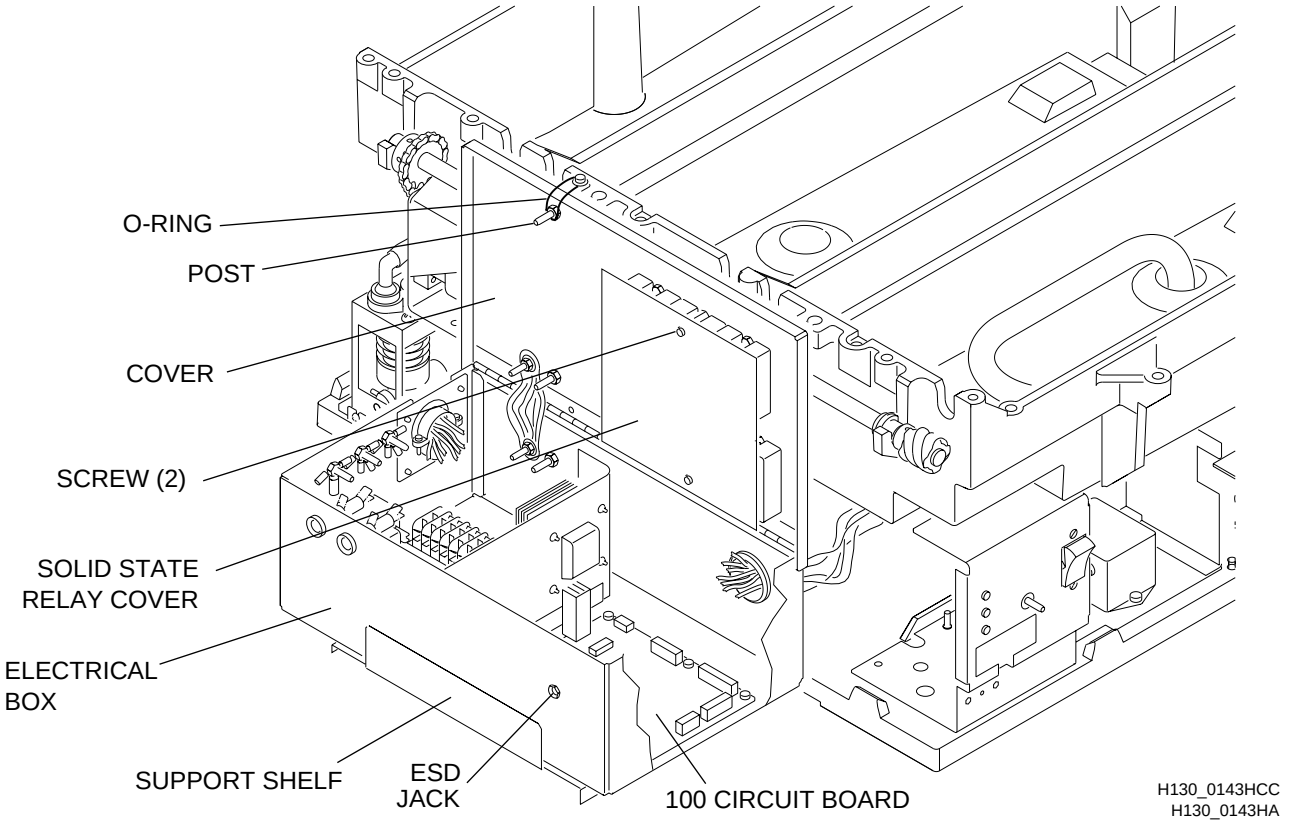
[4] Pull out the ELECTRICAL BOX.

[5] Connect your ESD protective wrist strap to the JACK on the ELECTRICAL BOX.

[6] Open the TOP COVER of the ELECTRICAL BOX. Fasten the COVER open by placing the O-RING on the PROCESSOR TANK around the POST on the ELECTRICAL BOX COVER.

[7] Remove the SOLID STATE RELAY COVER by removing the 2 SCREWS securing it.

Figure 85 **Pulling Out the ELECTRICAL BOX**



[8] Remove and keep the 4 LUGS from the SOLID STATE RELAY that you wish to remove. Remove and discard the METAL OXIDE VARISTER (MOV) from the SOLID STATE RELAY.

[9] Note the orientation of the wiring at the SOLID STATE RELAY.

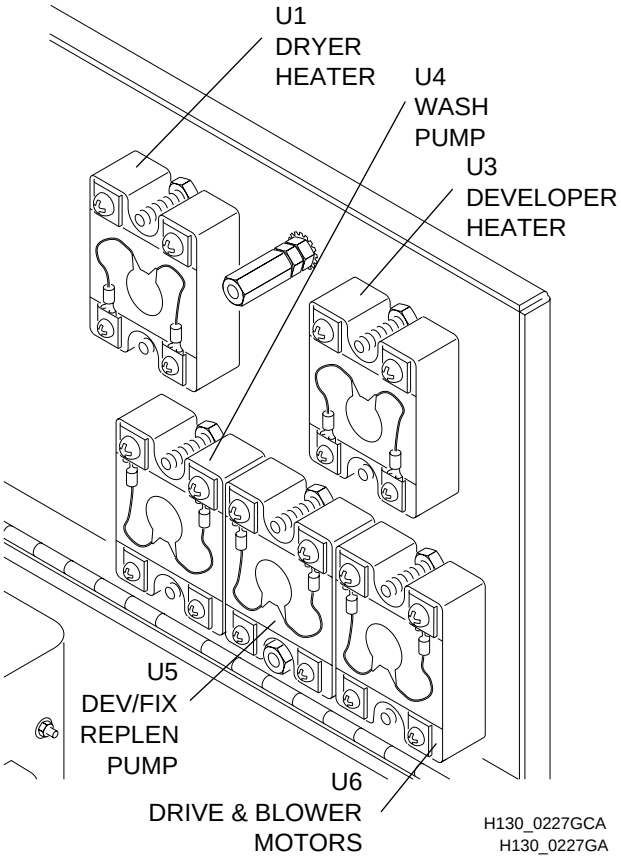
[10] Apply a thin coat of HEAT SINK COMPOUND TL-2192 on the back side of the new SOLID STATE RELAY.

[11] Install the SOLID STATE RELAY and the new MOV onto the TOP COVER of the ELECTRICAL BOX.

[12] Use the Service Routine to check for the correct operation of the SOLID STATE RELAY. See the Diagnostics Manual, Publication Number 981093.

[13] Reverse the Steps 1 through 7 to finish the installation.

Figure 86 **Removing the SOLID STATE RELAYS**



Removing the AC INTERLOCK SWITCH S5 for the TOP COVER

[1] Check that:
- PROCESSOR is de-energized
- main power is disconnected
- TOP COVER is removed

[2] Remove:
- DRYER RACK
- FIXER EVAPORATION COVER
- WASH RACK

[3] Remove the BACK ACCESS PANEL by loosening the 2 SCREWS.

[4] Cut and remove the WIRE TIES securing the INTERLOCK SWITCH BOOT.

[5] Pull the INTERLOCK SWITCH BOOT back to gain access to the CONNECTIONS.

[6] Record the position of the wires on the existing AC INTERLOCK SWITCH S5.

[7] Remove the wires from the AC INTERLOCK SWITCH S5. See Figure 87 on Page 99.

[8] Remove the AC INTERLOCK SWITCH S5 by "snapping" it out.

[9] Install the new AC INTERLOCK SWITCH S5 by pushing it in until it "snaps" into position.

[10] Connect the wires to the AC INTERLOCK SWITCH S5 using the information recorded in Step 6.

[11] Move the INTERLOCK SWITCH BOOT to its original position covering the SWITCH CONNECTIONS.

[12] Install the 2 WIRE TIES. See the figure for the correct locations.
- 1 WIRE TIE P/N 182196
- 1 WIRE TIE P/N 182915

[13] Using the SPRING GAUGE TL-3154, apply 12 lb of pressure on the INTERLOCK SWITCH BOOT.
(a) Check that the BOOT does not slip.

[14] Install:
- all ACCESS PANELS
- all RACKS

[15] Connect the main power and energize the PROCESSOR.

[16] Install the TOP COVER onto the PROCESSOR.

[17] Check that the TOP COVER actuates the newly installed AC INTERLOCK SWITCH S5.

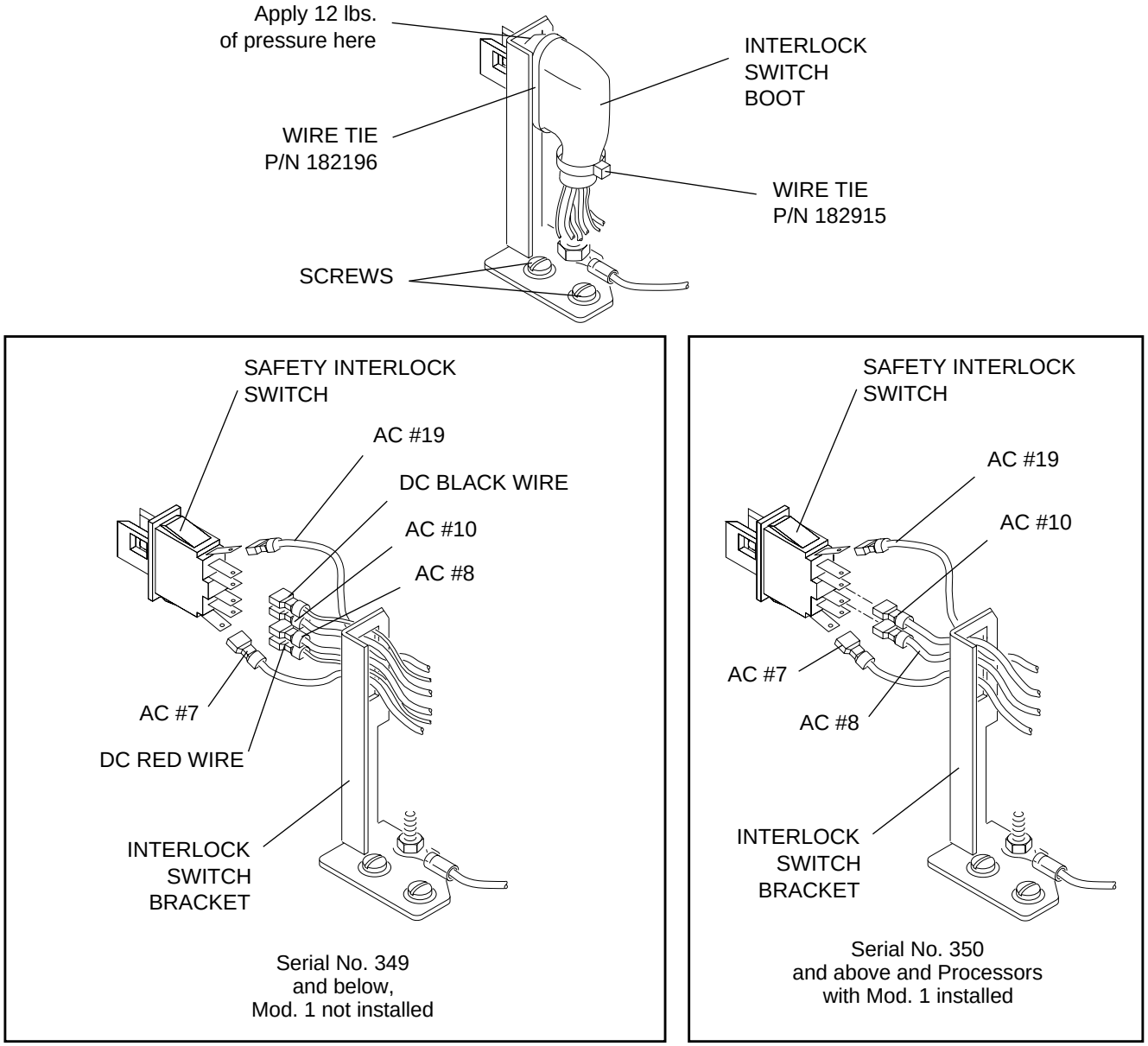
[18] If the DRIVE MOTOR does not energize when you install the TOP COVER onto the PROCESSOR, do the switch adjustment procedure on Page 98.

Adjusting the AC INTERLOCK SWITCH S5 for the TOP COVER

[19] Loosen the 2 SCREWS on the INTERLOCK SWITCH BRACKET.

[20] Push the MOUNTING BRACKET forward until the BLADE of the TOP COVER fully engages the INTERLOCK SWITCH. Tighten the 2 SCREWS to secure the BRACKET.

Figure 87 **Removing the AC INTERLOCK SWITCH S5 (M43A and Clinic 1 PROCESSORS Only)**



H130_0211DCA
H130_0211DA

Section 7: Periodic Maintenance General Information

Important

Only qualified service personnel should service the PROCESSOR.

Note

- This section includes additional procedures that are not in the Operator Manual, Publication Number 981089. For details about daily and weekly maintenance, see the Operator Manual.
- To ensure optimum operation of the PROCESSOR, it is important to use the following procedures.

[1] Process 5 sheets of unprocessed film of varying exposure before you begin the preventive maintenance. Check for artifacts on the film.

[2] Follow the recommended preventive maintenance procedures outlined in Table 3 on Page 101.

[3] Check the PROCESSOR for:

- cleanliness
- broken parts
- wear of parts
- leakage
- adherence to site specifications

[4] Remove any parts that are broken or have wear, and install new parts.

Warning

Dangerous Voltage

- Disconnect the main power before lubricating the parts.
- Do not allow any oil or grease to touch the RACK ASSEMBLIES or to drip into the TANKS.
- Use only recommended materials for the cleaning and lubrication of parts.

[5] Use the correct procedure to clean the parts.

[6] Make the necessary adjustments.

[7] Provide lubrication, if necessary. See Table 3 on Page 101.

[8] Process 5 sheets of unprocessed film of varying exposure in the PROCESSOR after you have done any service procedures. Check for artifacts on the film.

Table 3 Recommended Cleaning of Parts

Preventive Maintenance Schedule*	
Part or Assembly	**6 Months**
REPLENISHMENT TANKS	C
WASH RACK	C(2), I, R
WASH TUBES	C(2), I, R
DEVELOPER RACK	C(1), I, R
FIXER RACK	C(2), I, R
DRYER RACK	C, I, R
DEVELOPER/FIXER RECIRCULATION PUMPS	L
RACK - BEARINGS, DRIVE GEARS, AND ROLLERS	I, R
RACK SQUARENESS	I
DRYER AIR TUBES	C, I
DRYER DRIVE BELT TENSION	I, R
REPLENISHER STRAINERS	C, R
FILTER - Building Water Supply	R
DRAIN HOSES	I
EXHAUST - VENTILATION (if connected)	T
DRIVE MOTOR CHAIN	I, L
SCREEN at INCOMING WATER SOLENOID	C
DEVELOPER PROCESSOR TANK	C(1)
FIXER and WASH PROCESSOR TANKS	C(2)
REPLENISHMENT PUMP - Calibration	T
FILM SENSORS	C, T
DRYER BLOWER	L
DRIVE SHAFT WORM GEARS	L
DRIVE SHAFT THRUST BEARINGS	L

C	=	Rinse and clean carefully and completely using warm water and a lint-free cloth.
C(1)	=	Clean with *Kodak* Developer System Cleaner and Neutralizer.
C(2)	=	Clean with *Kodak* Fixer/Wash System Cleaner.
I	=	Inspect for condition and adjust, if necessary.
L	=	Lubricate with recommended material. See the following table.
R	=	Replace parts, if necessary.
T	=	Test and adjust, if necessary.

*Actual usage and site characteristics may require shorter intervals between maintenance. These guidelines are for locations adhering to the site specifications issued by Kodak.

Table 4 Recommended Lubrication of Parts

Part	Lubricant	Frequency	Procedure
MAIN DRIVE CHAIN	NLGI-No. 2 LITHIUM BALL and ROLLER BEARING GREASE TL-2324	As necessary. Check each month.	Apply to the surface of the CHAIN.
RECIRCULATION PUMP MOTORS	Light Oil, such as SAE No. 20 MOTOR OIL TL-2244	Every 6 months	Apply several drops in the oil holes which are accessible by removing the BACK ACCESS PANEL from the PROCESSOR.
MAIN DRIVE MOTOR	No lubrication necessary	--	--
GEAR HOUSING of the MAIN DRIVE MOTOR	No lubrication necessary	--	--
DRYER BLOWER MOTOR BEARINGS	Light Oil, such as SAE No. 20 MOTOR OIL TL-2244	Every 6 months	Apply several drops in the oil holes which are accessible by removing the BACK ACCESS PANEL from the PROCESSOR.
DRIVE SHAFT WORM GEARS	RED GREASE TL-4156	Every 6 months	Apply several drops to WORM GEARS.

Section 8: Preventive Maintenance: Every 6 Months or As Required

Reliable operation of the PROCESSOR requires that all PARTS are cleaned, adjusted, and lubricated correctly.

Important

In addition to the Preventive Maintenance procedures that should be done weekly and monthly, do the following procedure every 6 months or as required.

[1] Move the main wall CIRCUIT BREAKER to the OFF position.

[2] De-energize the PROCESSOR.

[3] Remove the TOP COVER from the PROCESSOR.

[4] Remove the DRIVE SIDE ACCESS PANEL.

[5] Drain the DEVELOPER, FIXER, and WASH TANKS.

[6] Remove:

- DRYER RACK
- EVAPORATION COVERS
- WASH RACK
- FIXER RACK
- DEVELOPER RACK

Caution

Carefully follow all safety precautions and directions included with the System Cleaner.

[7] Clean the RACKS and TANKS with System Cleaner:

- DEVELOPER RACK and DEVELOPER TANK
  - Use *Kodak* Developer System Cleaner.
- FIXER RACK and FIXER TANK
  - Use *Kodak* Fixer/Wash System Cleaner.
- WASH RACK and WASH TANK
  - Use *Kodak* Fixer/Wash System Cleaner or a mild solution of chlorine bleach if biological growth exists. Use 60 mL (2 fluid ounces) of bleach for every 3.8 L (1 gallon) of water. If necessary, soak the WASH RACK for 20-30 minutes.

[8] Rinse the RACKS well with warm running water to eliminate all traces of the System Cleaner.

[9] Fill and drain the TANKS at least 3 times with warm running water to eliminate all traces of the System Cleaner.

[10] Inspect the following parts on all the RACKS for excessive wear and if necessary, install the new parts listed below:

- ROLLERS
- BEARINGS
- DRIVE GEARS

[11] Check all RACKS for squareness and install them into the PROCESSOR. If necessary, see the procedure for squaring the RACKS.

[12] Check that the MAIN DRIVE CHAIN and WORMS are lubricated.

- If the DRIVE CHAIN is dry, apply lubricant to the DRIVE CHAIN. Use NLGI-No. 2 LITHIUM BALL and ROLLER BEARING GREASE TL-2324.
- If the DRIVE CHAIN is rusty, remove it and install a new DRIVE CHAIN.
- If the WORMS are dry, sparingly apply lubricant to the WORMS. Use RED GREASE TL-4156.

[13] Remove the DRYER RACK.

[14] Check that the SLOTS in the DRYER AIR TUBES are clean and in the correct position. If necessary, clean the DRYER AIR TUBES with a BOTTLE BRUSH and rinse with water.

[15] Check that the tension of the DRYER DRIVE BELT is correct.

[16] Lubricate the RECIRCULATION PUMPS with several drops of light oil, TL-2244.

[17] Lubricate the DRYER BLOWER BEARINGS with several drops of light oil, TL-2244.

[18] If the PROCESSOR is vented, clean the VENT and check it for obstructions.

[19] Check that the replenishment volumes are close to the recommended volumes listed in Publication No. 1C0578 provided in the front pocket of your publications binder.

[20] Check the FILM SENSORS for obstructions. If necessary, use a COTTON SWAB and warm water to clean the FILM SENSORS. Do **not** use alcohol to clean the SENSORS. The use of alcohol may frost the SENSOR.

[21] Remove the SCREEN for the WATER INPUT SOLENOID. Clean and install the SCREEN.

[22] Check all HOSES for the following. If necessary, clean or install new HOSES.

- kinks
- leaks
- obstructions

[23] Check the REPLENISHER STRAINERS in the replenishment lines for debris. If necessary, clean or install a new SCREEN.

[24] If necessary, install a new FILTER.

[25] If ventilation is connected to the PROCESSOR, measure the negative static pressure in the EXHAUST DUCT by doing the steps below:

(a) Connect one end of the RUBBER HOSE, provided with the AIR METER TL-2431, to the L TUBE, also provided with the AIR METER.

(b) Connect the other end of the RUBBER HOSE to the CENTER CONNECTOR on the AIR METER.

(c) Disconnect the EXHAUST DUCT from the PROCESSOR.

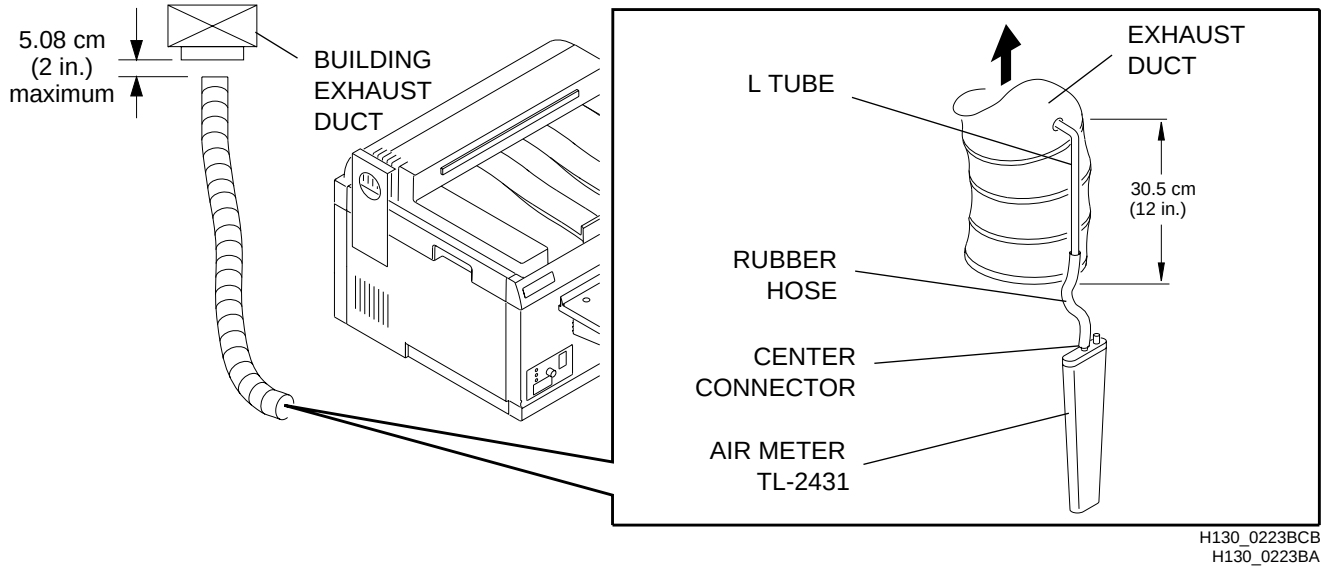
(d) Make a 6.4 mm (¼-in.) hole approximately 30.5 cm (12 in.) from the end of the EXHAUST DUCT to be connected to the PROCESSOR.

(e) Insert the L TUBE into the hole made in the EXHAUST DUCT so that the end of the L TUBE is flush with the outside wall of the EXHAUST DUCT.

(f) Check that there are no air leaks around the L TUBE.

(g) Hold the AIR METER vertically and read the pressure on the METER.

Figure 88 **Measuring the Negative Static Pressure in the EXHAUST DUCT**



(h) See the table below to determine the correct negative static pressure. To obtain the correct negative static pressure, adjust the clearance between the BUILDING EXHAUST DUCT and the DUCT from the PROCESSOR.

Table 5 Static Pressures

	Negative Static Pressure, (Water Head)	
DUCT Diameter	**MIN**	**MAX**
7.6 cm (3 in.)	0.76 mm (0.03 in.)	1.02 mm (0.04 in.)
10.2 cm (4 in.)	0.25 mm (0.01 in.)	0.51 mm (0.02 in.)

(i) Remove the L TUBE from the EXHAUST DUCT.

(j) Seal the hole in the EXHAUST DUCT.

[26] Check for the correct operation of the PROCESSOR by processing 3 sheets of film of varying exposure.

Section 9: Publication Change Notice Table

Table 6

Print Date	Pub No.	ECO No.	Affected Pages	File Name	Notes
Jan 1994	981090	2622-064	All Pages	3229sm_a.txt	1st Printing
March 1994	981090	2622-082	Front Cover, 3, 4, 6-21, 7-7, Back Cover	3229sm_a_082.txt	
April 1994	981090	2622-085	Front Cover through 4, 1-3, 3-2 through 3-6, 5-6, 5-14, 6-3, 6-20, 6-21, 7-5, 8-1, Back Cover	3229sm_a_085.txt	Added DC Interlock Switch S6
May 1994	981090	2622-098	Front Cover, 6-21, 8-1, Back Cover	3229sm_a_088.txt	Revised AC/DC Callouts
Oct. 1994	981090	2622-117	All Pages	3229sm_a_117.txt	Major Revision and Update to Bring Manual to Final Release Status
Sept. 1995	981090	2622-157	All Pages	sm3229_1_157.doc	Revision due to product changes; reprinted entire manual due to new publication software used for documentation

Kodak and *X-Omat* are trademarks.

sm3229_1_157.doc

Printed In USA

HEALTH SCIENCES DIVISION

EASTMAN KODAK COMPANY ● ROCHESTER, N.Y. 14650